

**IN THE UNITED STATES DISTRICT COURT FOR THE  
NORTHERN DISTRICT OF ILLINOIS  
EASTERN DIVISION**

**ZIP TOP, INC.**

Plaintiff,

v.

**S.C. JOHNSON & SON, INC.**

Defendant.

Civil Action No.: 22-cv-05028

**JURY TRIAL DEMANDED**

**PATENT CASE**

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**ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff Zip Top, Inc. (“Zip Top”) files this Original Complaint for Patent Infringement against Defendant S.C. Johnson & Son, Inc. (“SCJ”) and would respectfully show the Court as follows:

**PARTIES**

1. Plaintiff Zip Top is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business at 13501 Galleria Circle, Suite 220, Austin, Texas 78738.

2. Zip Top is the successor-in-interest to Zip Top, LLC, which was a Texas Limited Liability Company. Zip Top, LLC was converted to Zip Top, Inc., a Texas corporation. Zip Top, Inc. (TX) was converted to Zip Top, Inc., which is a Delaware corporation and the plaintiff.

3. On information and belief, Defendant SCJ is a Wisconsin corporation that maintains its principal place of business at 1525 Howe Street, Racine, Wisconsin 53403.

### **NATURE OF THE ACTION**

4. This is an action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. § 1 et seq.

5. This action arises under 35 U.S.C. § 271, wherein Defendant SCJ infringes the Asserted Patents, U.S. Patent No. 11,358,755 (the “755 patent”) and U.S. Patent No. 11,383,890 (the “890 patent”), by making, using, offering for sale, selling, and/or importing Ziploc ENDURABLES containers.

### **JURISDICTION AND VENUE**

6. This is an action for patent infringement arising under the Patent Laws of the United States, Title 35 of the United States Code.

7. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

8. On information and belief, SCJ maintains an established place of business in the state of Illinois and this district, specifically including its North American regional headquarters located at 550 W Washington Blvd., Chicago, IL 60661. On information and belief, the activities conducted by SCJ and its employees at this facility located in Chicago, Illinois are substantially related to SCJ’s infringing activities conducted in this state.

9. On information and belief, SCJ sells and offers for sale infringing products through its interactive website – Ziploc.com – making that website available to persons in the State of Illinois, and facilitating the sale of infringing products through that website to those persons for delivery by Walmart, Target, Amazon, Kroger, and Meijer. In particular, the warehouse stores inventory used to fulfill SCJ’s digital sales, and along with free shipping and same day delivery, SCJ offers its e-commerce customers the opportunity for in-store pickup of products ordered

through Ziploc.com. On information and belief, SCJ operates and controls all content and software used on the Ziploc.com website.

10. Without limitation, on information and belief, SCJ has derived revenues from its infringing acts occurring within Illinois.

11. This Court has personal jurisdiction over Defendant, because Defendant has sufficient minimum contacts within the State of Illinois and this judicial district, pursuant to due process and/or the Illinois Long-Arm Statute, due at least to its business in this forum, including at least a portion of the infringements alleged herein. Defendant has purposefully availed itself of the privileges of conducting business in the State of Illinois by regularly conducting and soliciting business within the State of Illinois and within this judicial district, and because Plaintiff's causes of action arise directly from Defendant's business contacts and other activities in the State of Illinois and this judicial district.

12. SCJ is subject to the Court's general jurisdiction, including from regularly doing or soliciting business, engaging in other persistent courses of conduct, and deriving substantial revenue from goods and services provided to persons or entities in Illinois. Further, SCJ is subject to the Court's personal jurisdiction at least due to its sale of products and/or services within Illinois. SCJ has committed such purposeful acts and/or transactions in Illinois such that it reasonably should know and expect that it could be haled into this Court as a consequence of such activity.

13. Venue is proper in this judicial district under 28 U.S.C. §§ 1391 and 1400(b).

#### **ZIP TOP INVENTOR'S BACKGROUND**

14. Zip Top's inventor and founder, Rebecca Finell, has proven herself as a product designer and brand strategist.

15. In 2004, she founded Boon Inc., and served as its president, principal designer, and chief brand strategist. Through Boon, she invented and marketed innovative and award winning baby products, including: the Boon™ green grass drying rack, the Boon™ squirt spoon, and the Boon™ “Frog Pod,” which is a stylish tool for scooping toys out of a bathtub and hanging them out of the way to dry.



16. Detailed information about these BOON™ products is available at [www.booninc.com](http://www.booninc.com).

17. In 2008, Rebecca Finell started Keen Distribution and served as its CEO. Keen took other brand's baby products and distributed them into the U.S. market. It grew very fast, more than \$5M in year one. Keen elevated many products, including the Bumbo™ baby seat with branding, product redesigns, packaging, photography, marketing, copy, new line extensions. Rebecca Finell personally showed/sold each product line to big mass market buyers in the U.S. market.

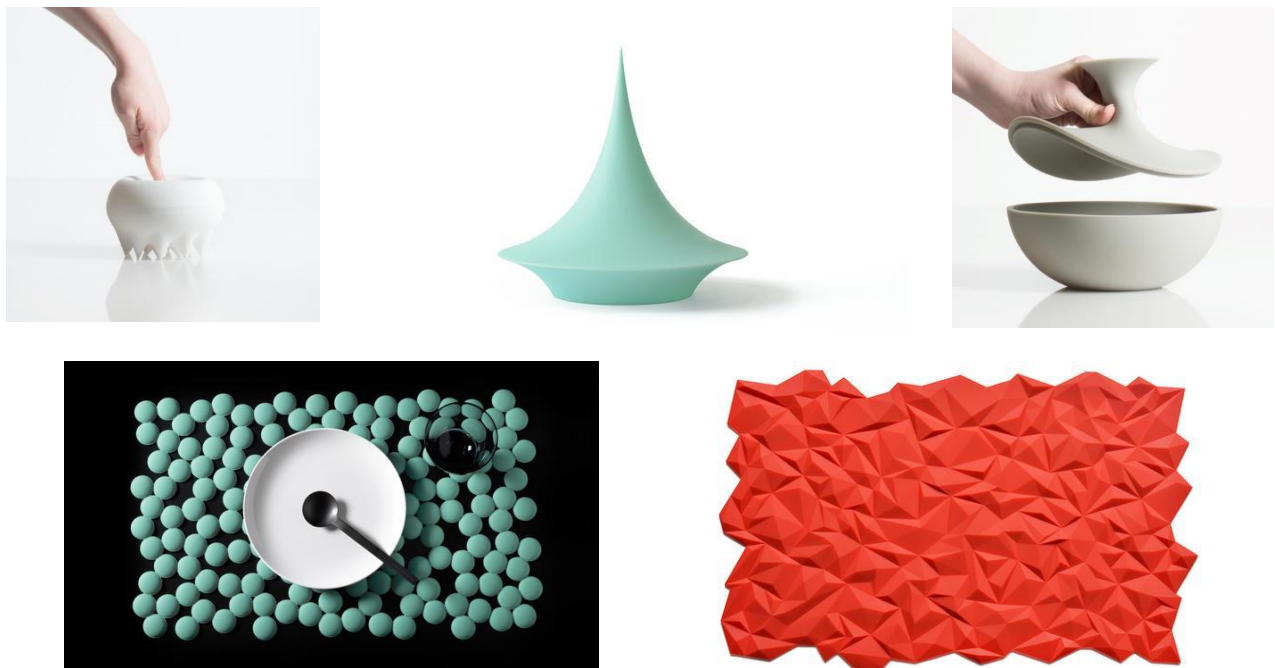


18. In 2011, Rebecca Finell sold Keen Distribution and Boon, Inc. as a package deal to TOMY for over \$31 million, while retaining an ownership piece of the TOMY company.

19. In 2013, Rebeca Finell launched Finell Co. LLC to develop FINELL® branded luxury products, including a line of tabletop accessories, serving trays, bowls, and even handbags. Finell Co. LLC quickly received international design recognition, awards, and the attention of top luxury stores. These products continue to be featured in high-profile press and movies.



20. Rebecca Finell invented and designed many FINELL® products made of silicone because of its strength, flexibility and versatility. For example, FINELL® silicone products include vessels and placemats/runners of different silicone shapes and colors.



### **THE ASSERTED PATENTS**

21. Zip Top incorporates the above paragraphs herein by reference.

22. On June 14, 2022, United States Patent No. 11,358,755 (“the ’755 Patent”) was duly and legally issued by the United States Patent and Trademark Office. The ’755 Patent is titled “Flexible Foodstuff Container with Closure.” A true and correct copy of the ’755 Patent is attached hereto as Exhibit A and incorporated herein by reference.

23. On July 12, 2022, United States Patent No. 11,383,890 (“the ’890 Patent”) was duly and legally issued by the United States Patent and Trademark Office. The ’890 Patent is titled “Silicone Molding Process for Making a Container with Zipper Members Tapered at a Flexible Spout.” A true and correct copy of the ’890 Patent is attached hereto as Exhibit B and incorporated herein by reference.

24. Zip Top is the successor-in-interest of the assignee of all right, title, and interest in the Asserted Patents (the ’755 and ’890 Patents), including all rights to enforce and prosecute actions for infringement and to collect damages for all relevant times against infringers of the Asserted Patents. Accordingly, Zip Top possesses the exclusive right and standing to prosecute the present action for infringement of the Asserted Patents against SCJ.

**ZIP TOP’S INNOVATION OF PATENTED INVENTIONS AND PRODUCTS**

25. Zip Top incorporates the above paragraphs herein by reference.

26. In 2017, Rebecca Finell, as chief product designer for Finell Co LLC, began to develop her ideas for a silicone container.

27. Later, Zip Top LLC was formed as a Texas Limited Liability Company to spin the Zip Top™ products out of Finell Co.

28. During March 10-13, 2018 at the International Home + Housewares Show in Chicago, Illinois, Zip Top presented to prospective retail buyer representatives its Zip Top® line of endlessly reusable 100% platinum silicone containers that stand up, stay open and zip shut.



29. Zip Top's silicone container product innovations of the Asserted Patents have been widely praised and recognized in the industry.





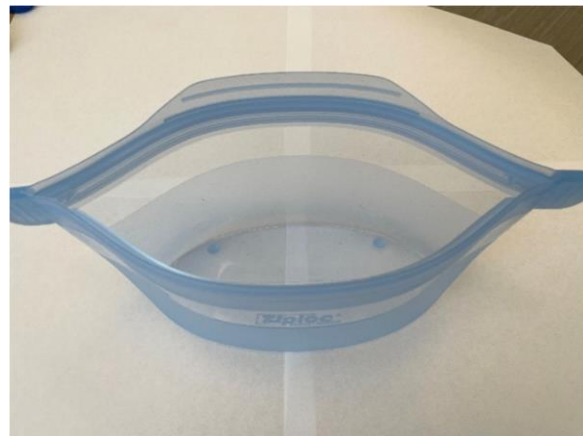
30. Since 2018, Zip Top has successfully marketed its Zip Top® silicone containers of the Asserted Patents through national retailers, ecommerce, direct-to-consumer marketing, and its website ([www.ziptop.co](http://www.ziptop.co)).



### **ACCUSED INSTRUMENTALITIES—ZIPLOC ENDURABLES CONTAINERS**

31. Zip Top incorporates the above paragraphs herein by reference.

32. Now and within the past six years, SCJ makes, uses, causes to be used, offers for sale, sells, and/or imports Ziploc ENDURABLES containers (Accused Instrumentalities).





33. Upon information and belief, the Accused Instrumentalities, now and within the past six years, are being distributed through retail stores including, but not limited to, Walmart, Target, Amazon, Kroger, HEB, and Meijer.

34. Upon information and belief, Plaintiff Zip Top's brand is being harmed by Defendant SCJ's Accused Instrumentalities entering the market. Plaintiff Zip Top was first to market and is substantially ahead of all other relevant companies in terms of brand equity, meaning that Plaintiff Zip Top has the greatest amount of brand equity to lose. SCJ's patent infringement will lead to Plaintiff Zip Top losing market share. Each sale of SCJ's product likely deprives Plaintiff Zip Top of market share, revenue, and brand recognition.

35. While still infringing the Asserted Patents, the Accused Instrumentalities introduced in the silicone container market by Defendant SCJ are of lesser quality and inferior design compared to Zip Top® silicone containers. Upon information and belief, Defendant SCJ's entry into the container market with an inferior silicone container is having an adverse effect on Plaintiff Zip Top's reputation and sales because customers assume all silicone containers are of inferior quality regardless of which entity has manufactured and marketed them.

**COUNT I — PATENT INFRINGEMENT U.S. PAT. NO. 11,358,755**

36. Zip Top incorporates the above paragraphs herein by reference.

37. Upon information and belief, SCJ has directly infringed under 35 U.S.C. § 271(a) at least claim 1 of the '755 Patent by making, using, selling, importing, offering for sale, providing, practicing, and causing to be used the Accused Instrumentalities that infringe the patented containers, as detailed in the preliminary claim chart attached hereto as Exhibit C and incorporated herein by reference.

38. SCJ was made aware of the '755 Patent and its infringement thereof at least as early as the filing of this Complaint.

39. Upon information and belief, SCJ has induced and continues to induce others to infringe at least claim 1 of the '755 Patent under 35 U.S.C. § 271(b) by, among other things, and with specific intent or willful blindness, actively aiding and abetting others to infringe, including, but not limited to SCJ's partners, clients and customers, whose use of the Accused Instrumentalities constitutes direct infringement of at least claim 1 of the '755 Patent.

40. In particular, SCJ's actions that aid and abet others such as its partners, clients and customers to infringe include advertising and distributing the Accused Instrumentalities and providing instructional materials and services regarding the Accused Instrumentalities.

41. Any party, including SCJ's partners, clients and customers using the Accused Instrumentalities necessarily infringes the '755 Patent. SCJ thus induces others to infringe the '755 Patent. SCJ has knowingly induced infringement since at least the filing of this Complaint when SCJ was first made aware of the '755 Patent.

42. Upon information and belief, SCJ is liable as a contributory infringer of the '755 patent under 35 U.S.C. § 271(c) by offering to sell, selling and importing into the United States the Accused Instrumentalities that infringe the patented container, to be especially made or adapted for use in an infringement of the '755 Patent. Each of the Accused Instrumentalities is a material component for use in practicing the '755 Patent and is specifically made and are not a staple article of commerce or capable of substantial non-infringing use.

43. Plaintiff Zip Top has been harmed by SCJ's infringing activities. Thus, SCJ is liable to Zip Top in an amount that adequately compensates Zip Top for such infringements, which, by

law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

44. Plaintiff Zip Top has suffered, and is continuing to suffer, damages as a result of the Defendant SCJ's infringement of the Asserted Patents, and Plaintiff Zip Top is entitled to compensation, including Defendant SCJ's profits, and other monetary relief to the fullest extent allowed by law, including attorneys' fees, pursuant to 35 U.S.C. §§ 284, and 285.

**COUNT II — PATENT INFRINGEMENT U.S. PAT. NO. 11,383,890**

45. Zip Top incorporates the above paragraphs herein by reference.

46. Upon information and belief, SCJ has directly infringed under 35 U.S.C. § 271(a) at least claim 1 of the '890 Patent by making, using, selling, importing, offering for sale, providing, practicing, and causing to be used the Accused Instrumentalities that infringe the patented containers, as detailed in the preliminary claim chart attached hereto as Exhibit D and incorporated herein by reference.

47. Upon information and belief, SCJ has directly infringed under 35 U.S.C. § 271(g) at least claim 1 of the '890 Patent by importing, offering to sell, selling, and/or using the Accused Instrumentalities made by the process claimed in the '890 Patent, as detailed in the preliminary claim chart attached hereto as Exhibit D and incorporated herein by reference.

48. SCJ was made aware of the '890 Patent and its infringement thereof at least as early as the filing of this Complaint.

49. Upon information and belief, SCJ has induced and continues to induce others to infringe at least claim 1 of the '890 Patent under 35 U.S.C. § 271(b) by, among other things, and with specific intent or willful blindness, actively aiding and abetting others to infringe, including,

but not limited to SCJ's partners, clients and customers, whose use of the Accused Instrumentalities constitutes direct infringement of at least claim 1 of the '890 Patent.

50. In particular, SCJ's actions that aid and abet others such as its partners, clients and customers to infringe include advertising and distributing the Accused Instrumentalities and providing instruction materials and services regarding the Accused Instrumentalities.

51. Any party, including SCJ's partners, clients and customers using the Accused Instrumentalities necessarily infringes the '890 Patent. SCJ thus induces others to infringe the '890 Patent. SCJ has knowingly induced infringement since at least the filing of this Complaint when SCJ was first made aware of the '890 Patent.

52. Upon information and belief, SCJ is liable as a contributory infringer of the '890 Patent under 35 U.S.C. § 271(c) by offering to sell, selling and importing into the United States the Accused Instrumentalities that infringe the patented container, to be especially made or adapted for use in an infringement of the '890 Patent. Each of the Accused Instrumentalities is a material component for use in practicing the '890 Patent and is specifically made and are not a staple article of commerce capable of substantial non-infringing use.

53. Plaintiff Zip Top has been harmed by SCJ's infringing activities. Thus, SCJ is liable to Zip Top in an amount that adequately compensates Zip Top for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

54. Plaintiff Zip Top has suffered, and is continuing to suffer, damages as the result of Defendant SCJ's infringement of the Asserted Patents, and Plaintiff Zip Top is entitled to compensation, including Defendant SCJ's profits, and other monetary relief to the fullest extent allowed by law, including attorneys' fees, pursuant to 35 U.S.C. §§ 284, and 285.

**JURY DEMAND**

Plaintiff Zip Top demands a trial by jury of all issues so triable.

**PRAYER FOR RELIEF**

WHEREFORE, Plaintiff Zip Top requests this Court to enter judgment against Defendant SCJ, including SCJ subsidiaries, affiliates, agents, servants, employees, and all persons in active concert or participation with Defendant SCJ, and grant the following relief:

- A. Entry of judgment that Defendant SCJ has directly infringed, contributorily infringed, and/or induced infringement of one or more claims of the '755 Patent;
- B. Entry of judgment that Defendant SCJ has directly infringed, contributorily infringed, and/or induced infringement of one or more claims of the '890 Patent;
- C. Damages in an amount adequate to compensate Plaintiff Zip Top for Defendant SCJ's infringements to be determined at trial, which amount cannot be less than a reasonable royalty;
- D. Pre-judgment and post-judgment interest on the damages assessed at the maximum rate permitted by law;
- E. Entry of a judgment awarding treble damages pursuant to 35 U.S.C. § 284 for SCJ's willful infringement of the '755 and '890 Patents;
- F. A Court declaration that this is an exceptional case and award Plaintiff Zip Top its reasonable attorneys' fees and expenses in accordance with 35 U.S.C. § 285;
- G. Issue a preliminary injunction and thereafter a permanent injunction enjoining and restraining Defendant SCJ, its directors, officers, agents, servants, employees, and those acting in privity or in concert with them, and their subsidiaries, divisions, successors, and

assigns, from further acts of infringement, contributory infringement, or inducement of infringement of the '755 and '890 Patents; and

H. Such other and further relief, both at law and in equity, to which Plaintiff Zip Top may be entitled and which the Court deems just and proper.

Dated: September 15, 2022

Respectfully submitted,

/s/ Brian E. Martin

Brian E. Martin  
bmartin@stamostrucco.com  
STAMOS & TRUCCO LLP  
One East Wacker Drive, 3<sup>rd</sup> Floor  
Chicago, IL 60601  
tel: 312.630.7979

R. William Beard, Jr.  
TX Bar No. 00793318  
wbeard@sbgfirm.com  
Truman H. Fenton  
TX Bar No. 24059742  
tfenton@sbgfirm.com  
SLAYDEN GRUBERT BEARD PLLC  
401 Congress Ave., Suite 1650  
Austin, TX 78701  
tel: 512.402.3550

*Attorneys for Plaintiff Zip Top, Inc.*





US011358755B2

(12) **United States Patent**  
**Finell et al.**

(10) **Patent No.:** **US 11,358,755 B2**  
(45) **Date of Patent:** **Jun. 14, 2022**

(54) **FLEXIBLE FOODSTUFF CONTAINER WITH CLOSURE**

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(71) Applicant: **Rebecca Finell**, Austin, TX (US)

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(Continued)

(72) Inventors: **Rebecca M. Finell**, Austin, TX (US);  
**Joshua J. Nelson**, Mesa, AZ (US)

#### OTHER PUBLICATIONS

(73) Assignee: **ZIP TOP LLC**, Austin, TX (US)

Partial European Search Report, Application No. 18159842.6, 9 pages.

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(Continued)

(21) Appl. No.: **15/910,757**

*Primary Examiner* — Jes F Pascua

(22) Filed: **Mar. 2, 2018**

*Assistant Examiner* — Nina K Attel

(65) **Prior Publication Data**

US 2018/0251267 A1 Sep. 6, 2018

(74) *Attorney, Agent, or Firm* — Slayden Grubert Beard PLLC

#### Related U.S. Application Data

(57) **ABSTRACT**

(60) Provisional application No. 62/466,156, filed on Mar. 2, 2017.

(51) **Int. Cl.**  
**B65D 33/25** (2006.01)  
**A47G 19/02** (2006.01)

(Continued)

(52) **U.S. Cl.**  
CPC ..... **B65D 33/2508** (2013.01); **A47G 19/02**  
(2013.01); **A47G 19/2205** (2013.01);  
(Continued)

(58) **Field of Classification Search**  
CPC ..... B65D 33/25; B65D 33/2508; B65D  
33/2516; B65D 33/2525; B65D 33/2533;  
(Continued)

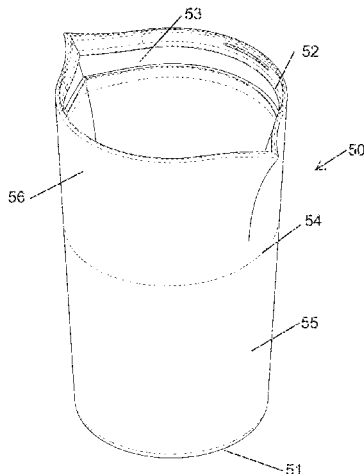
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**19 Claims, 16 Drawing Sheets**



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FIG. 1A

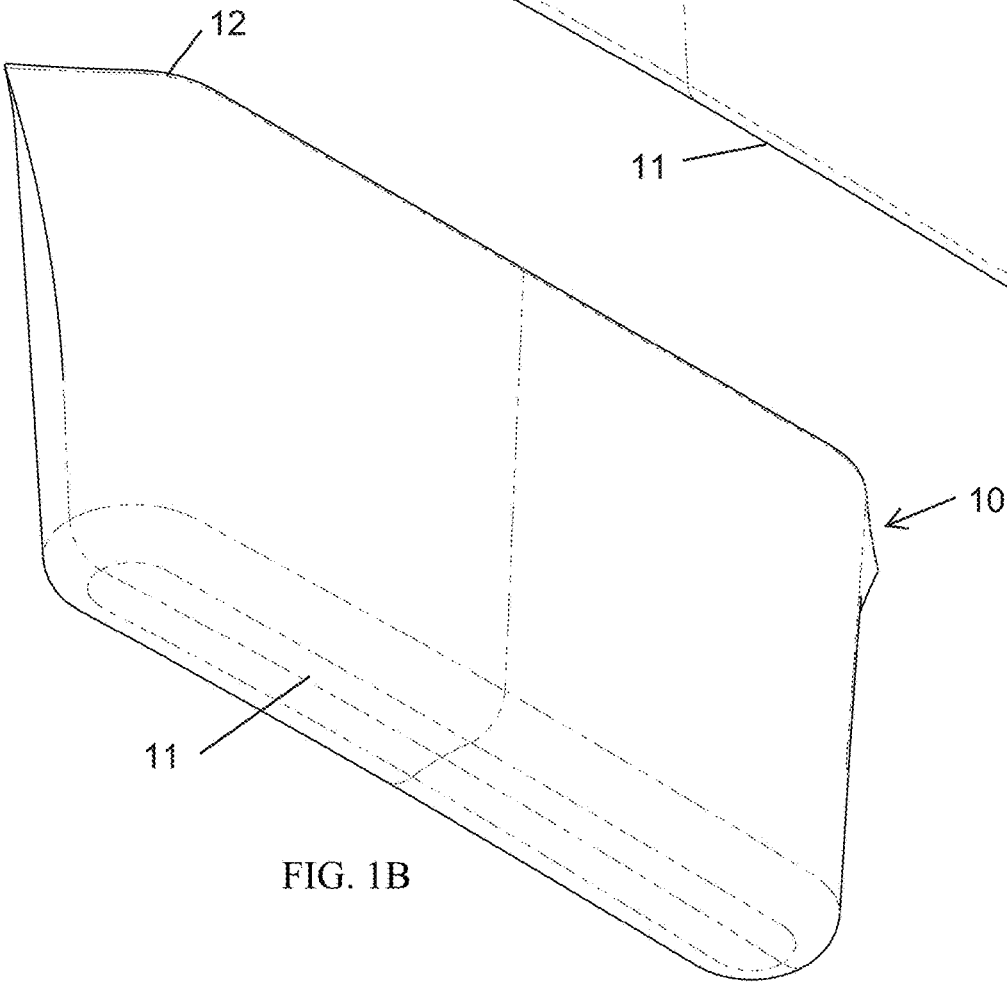
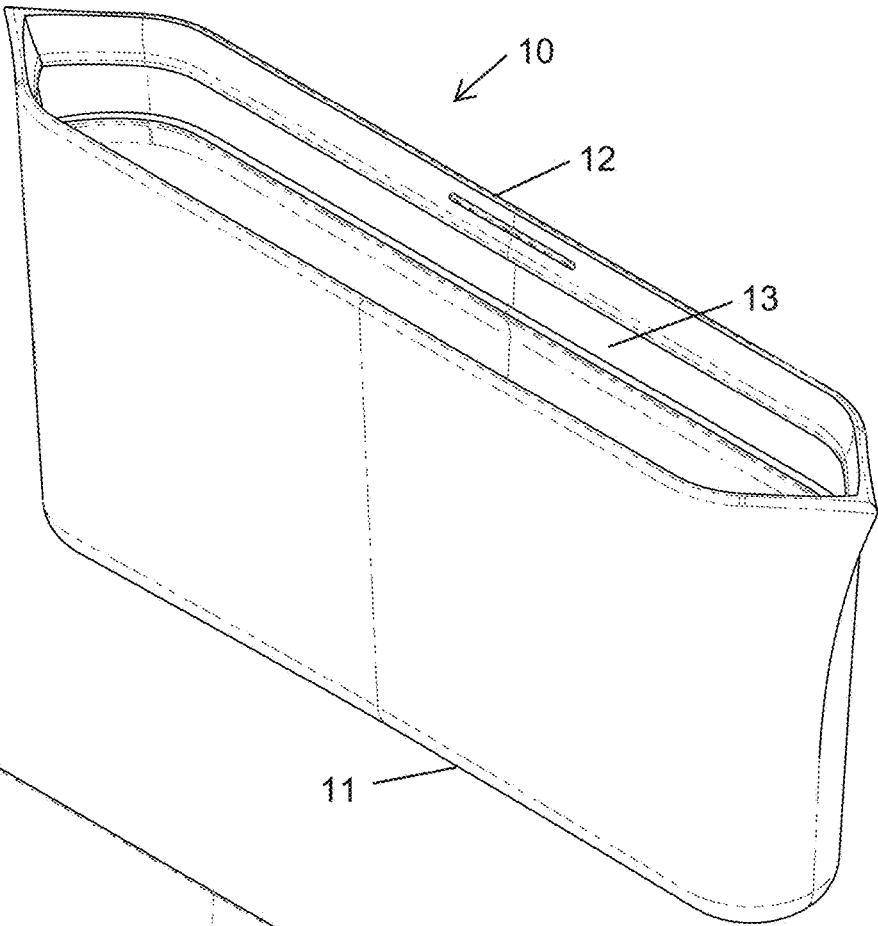


FIG. 1B

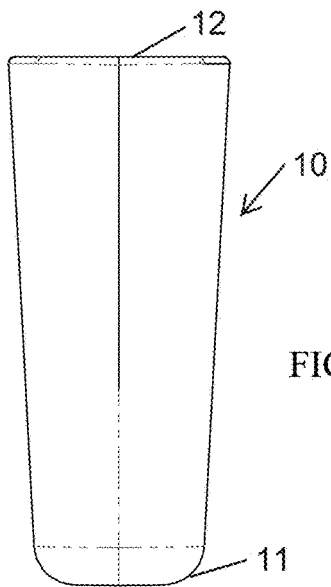


FIG. 1C

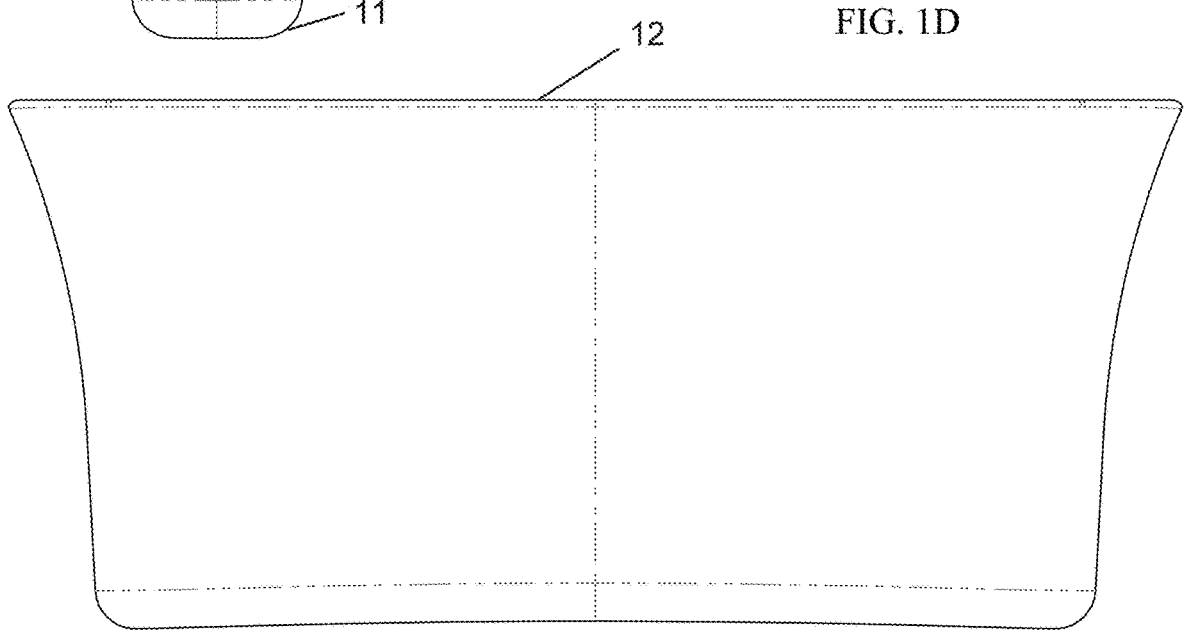


FIG. 1D

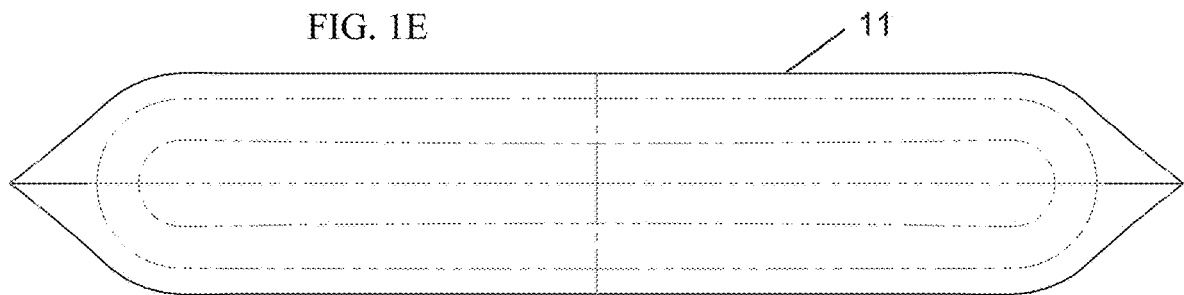
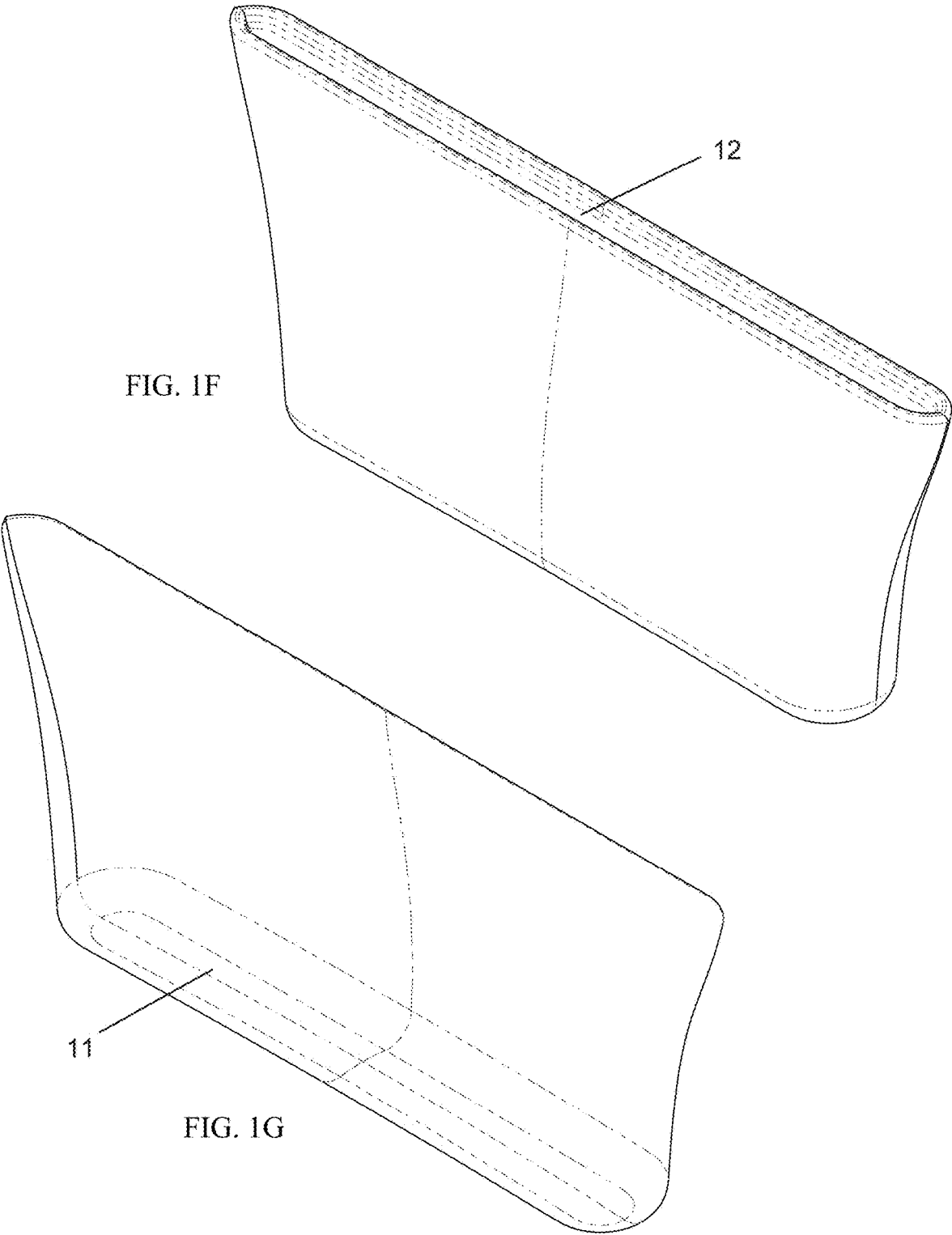


FIG. 1E





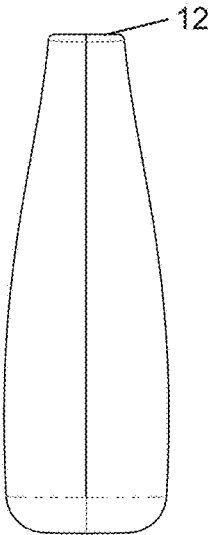


FIG. 1H

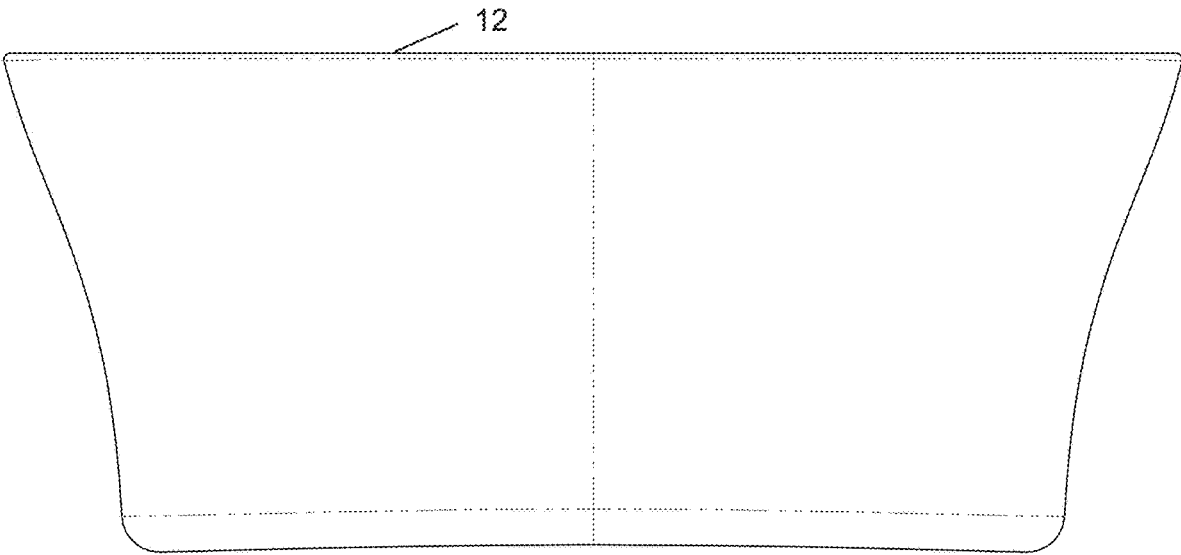


FIG. 1I

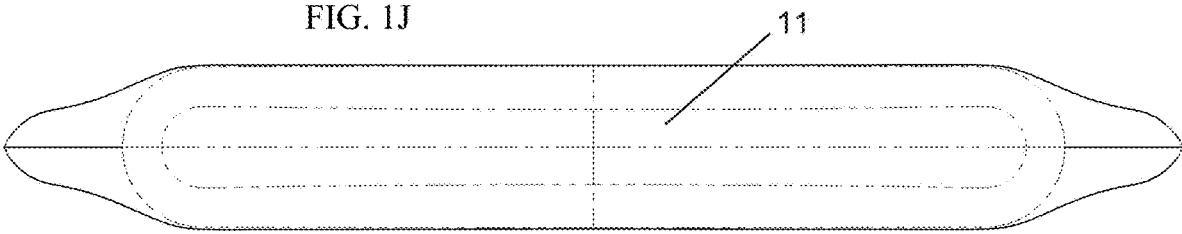


FIG. 1J

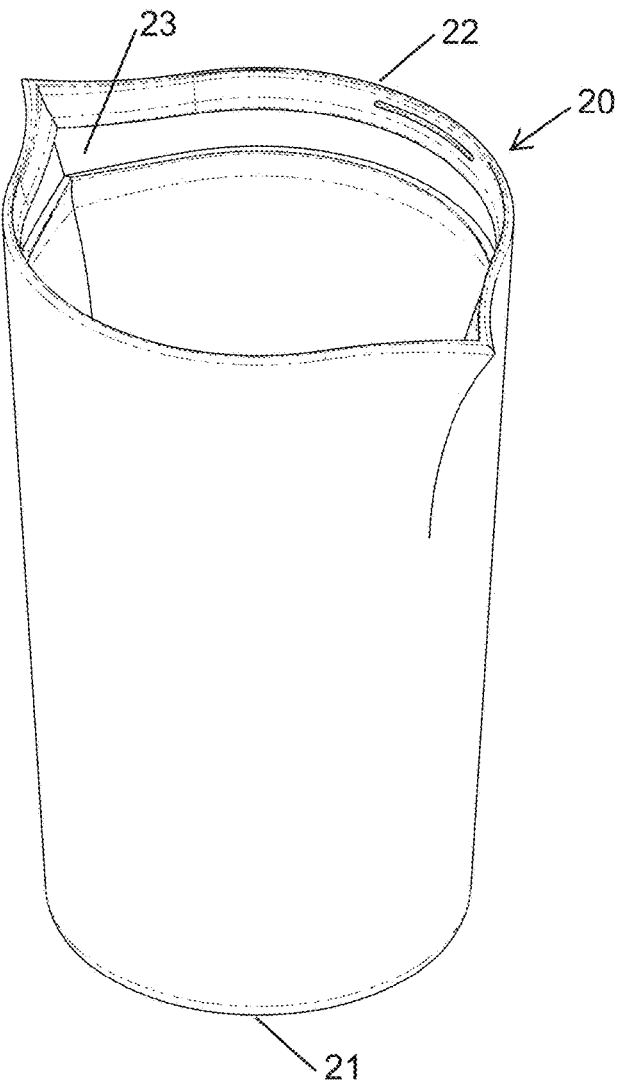
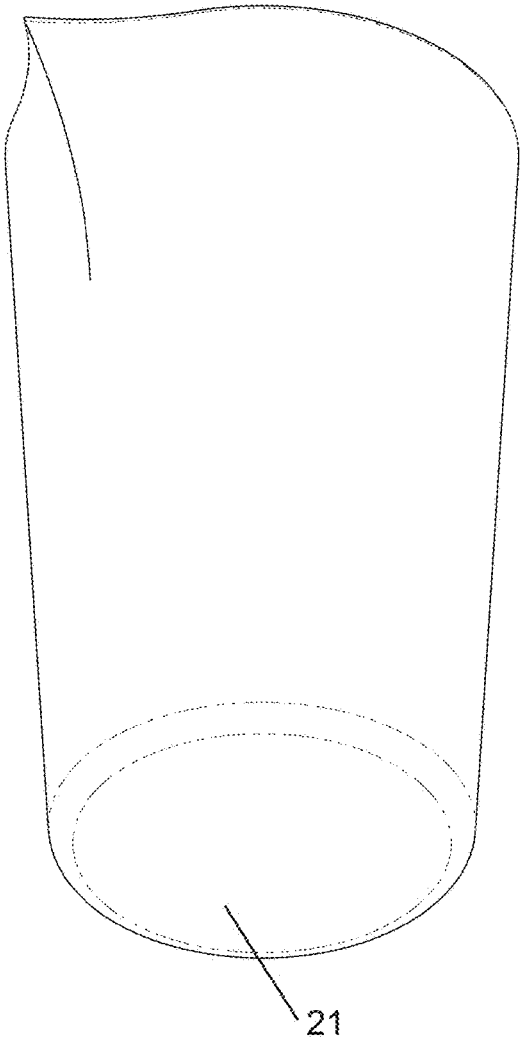


FIG. 2A

FIG. 2B



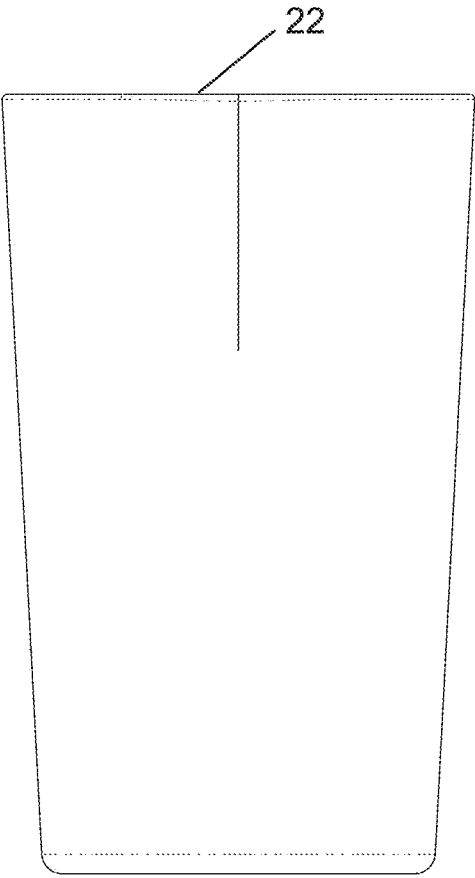


FIG. 2D

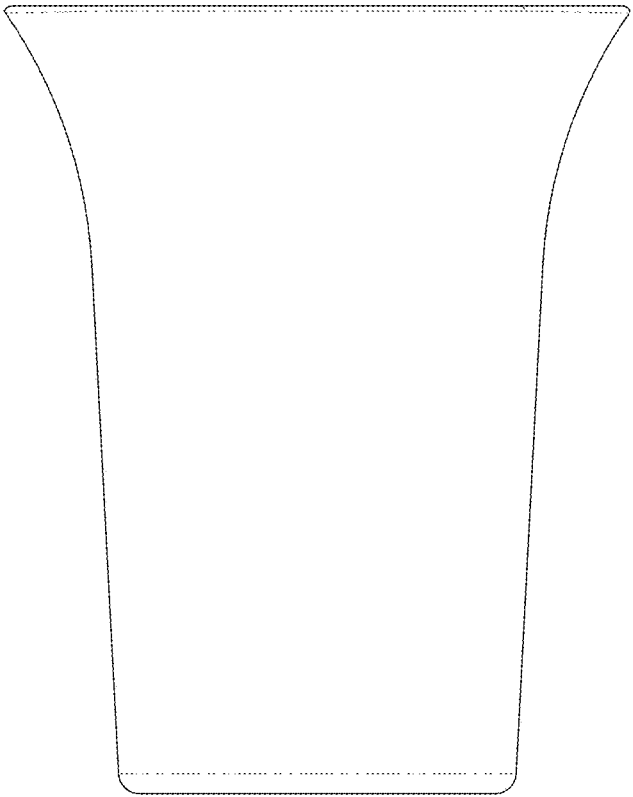


FIG. 2C

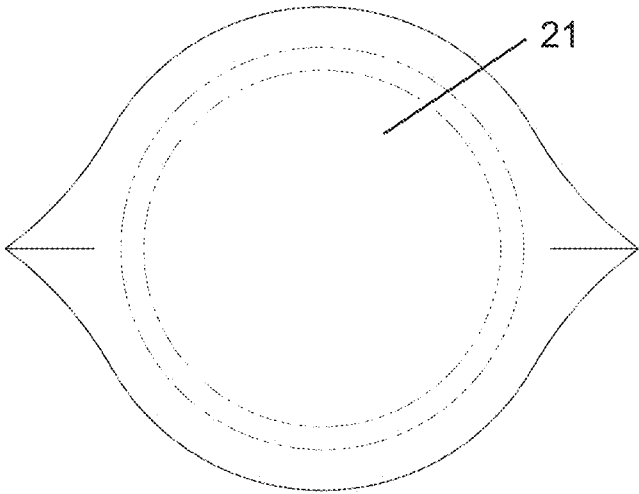
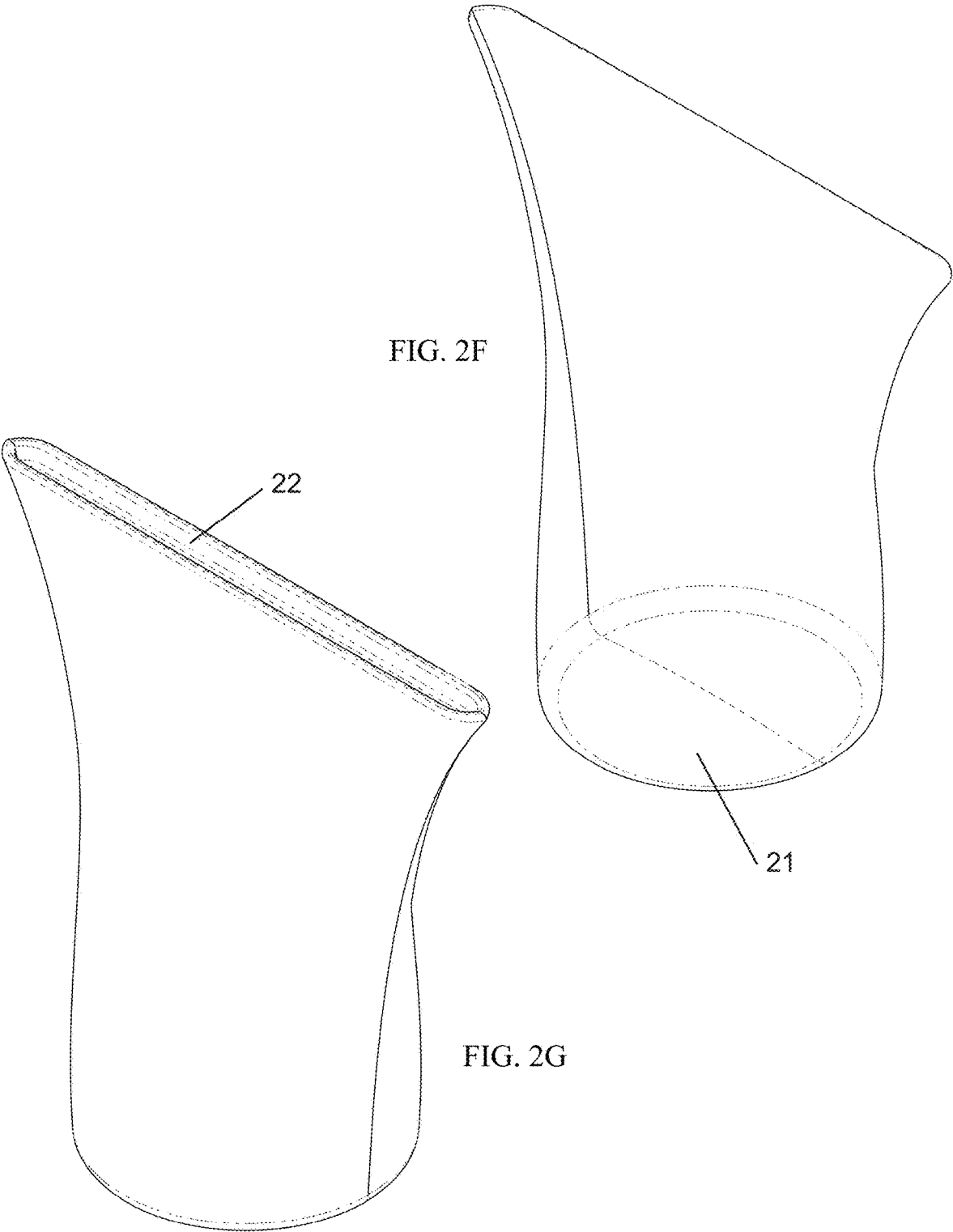


FIG. 2E



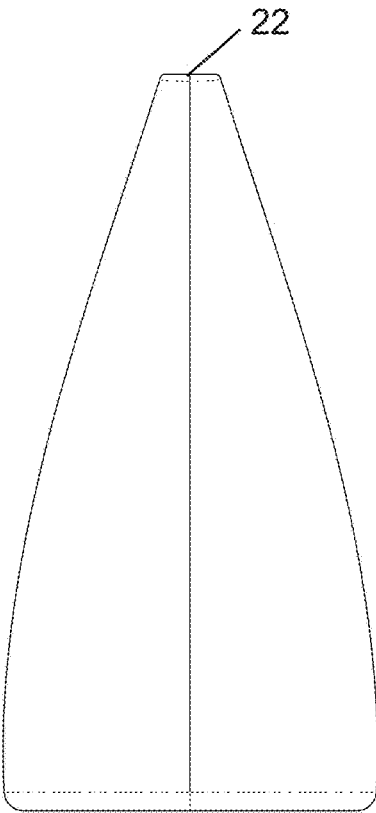


FIG. 2H

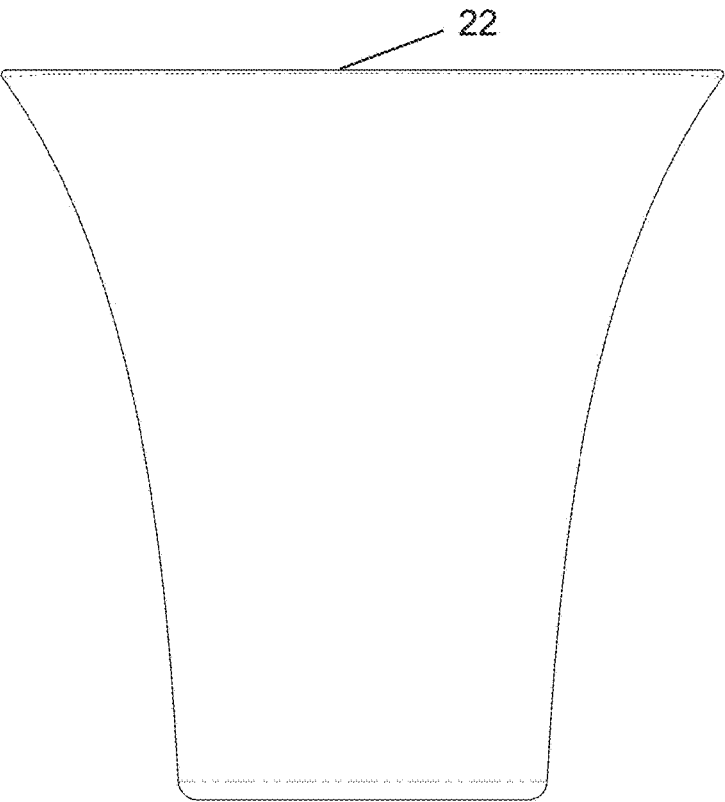


FIG. 2I

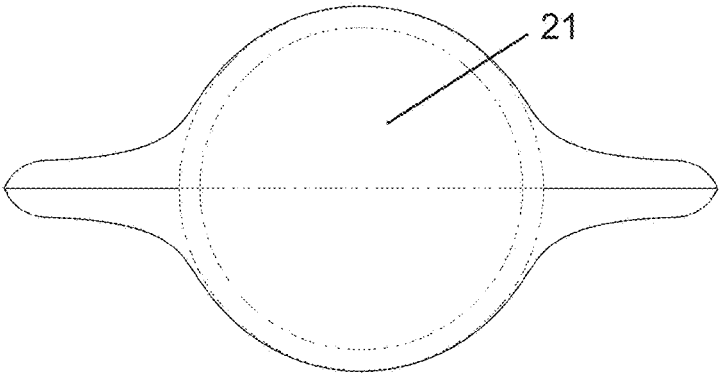


FIG. 2J



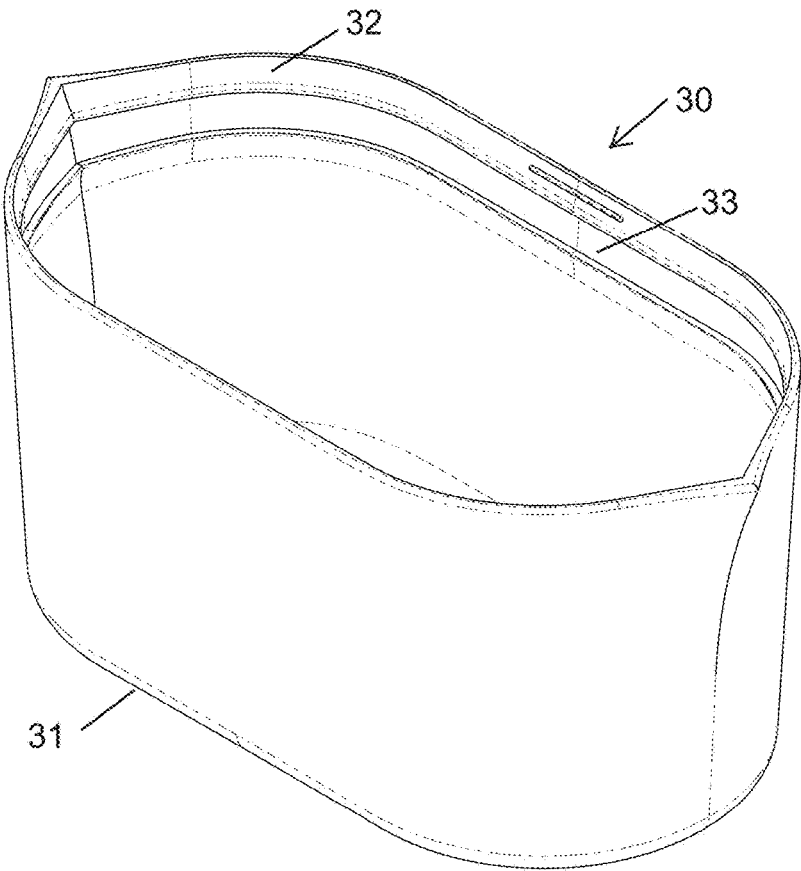


FIG. 3A

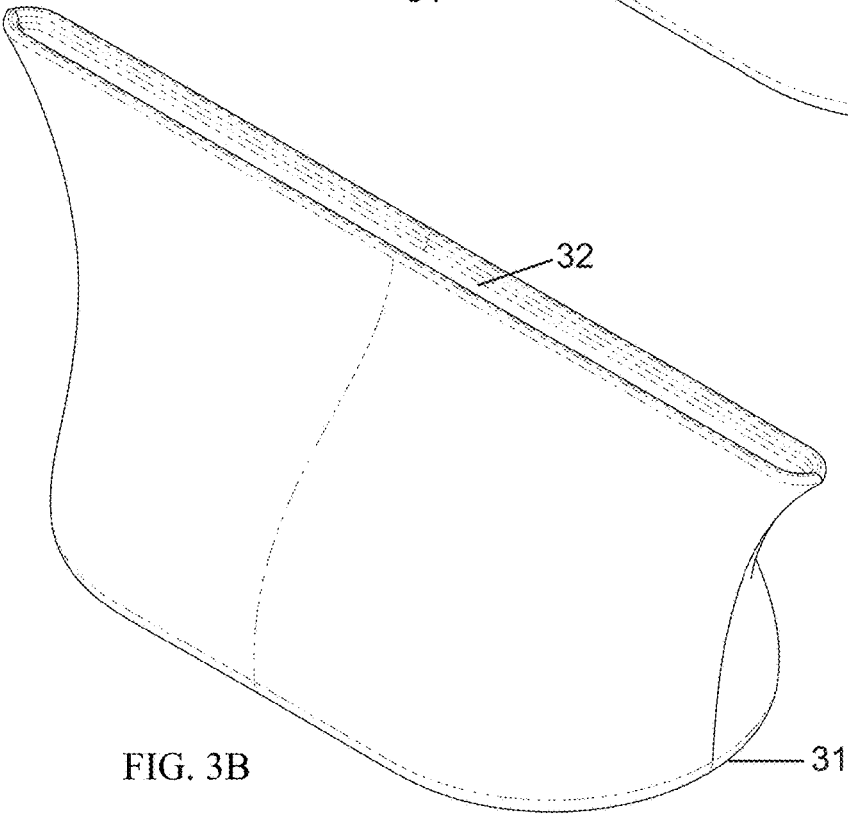
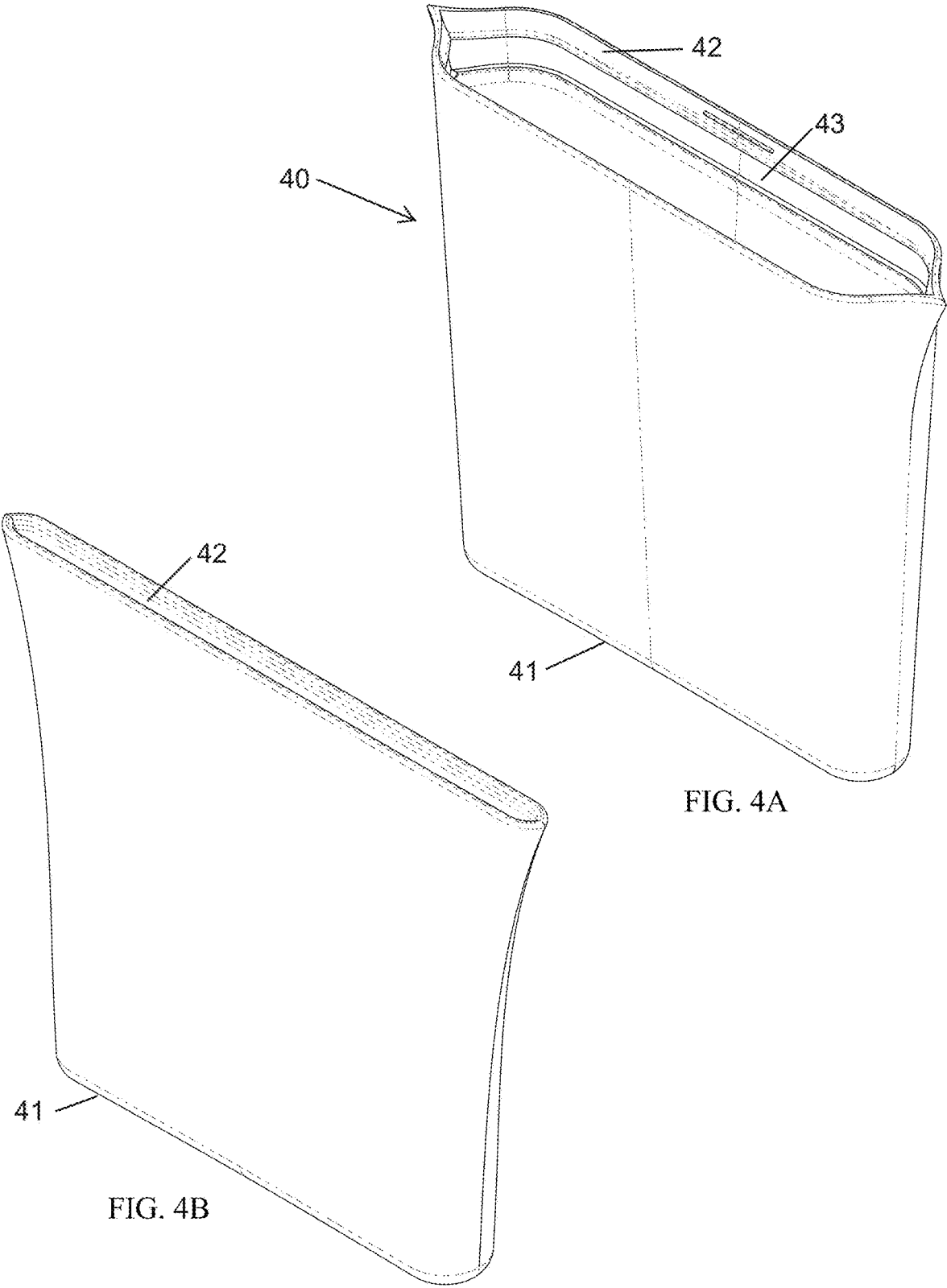
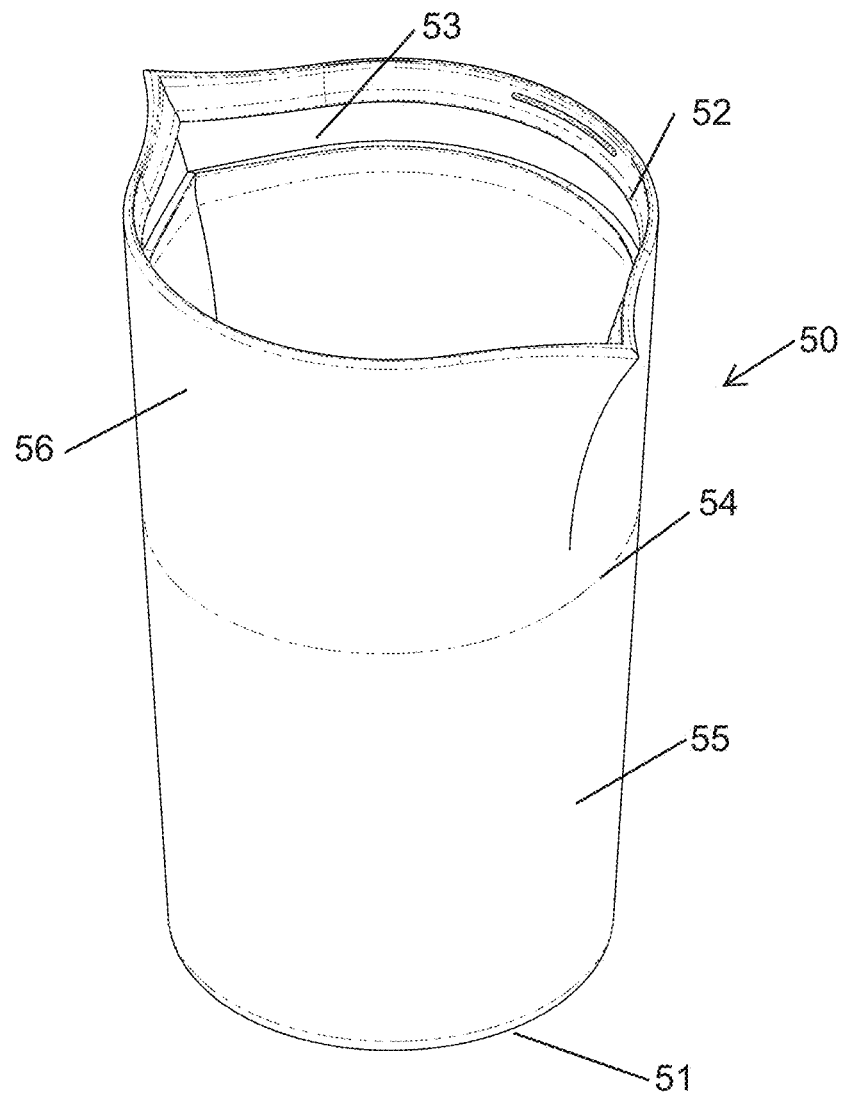


FIG. 3B





**FIG. 5**

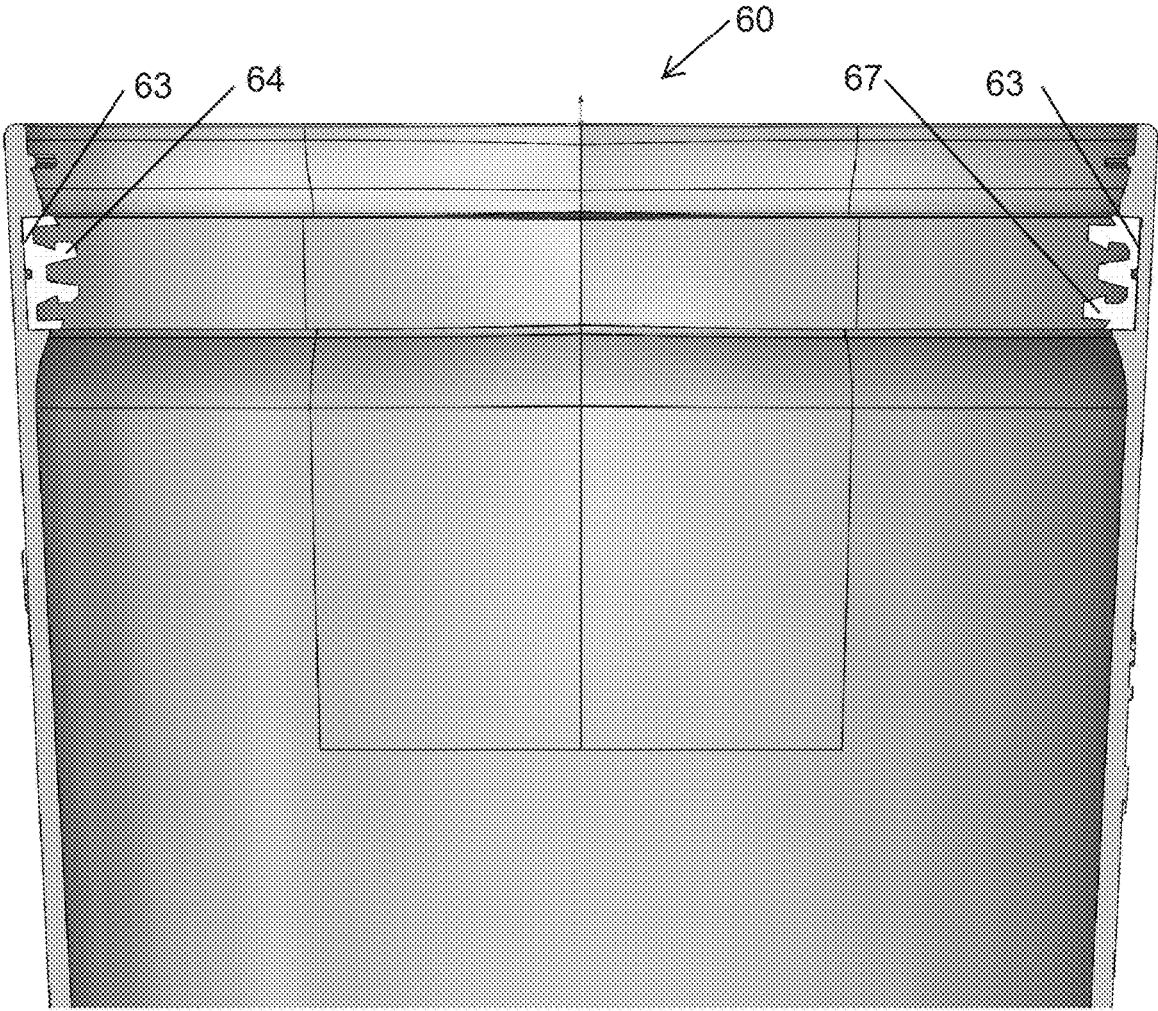


FIG. 6A

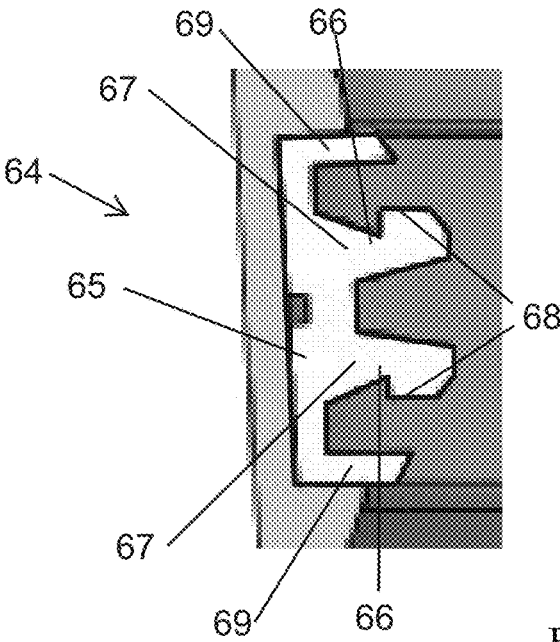
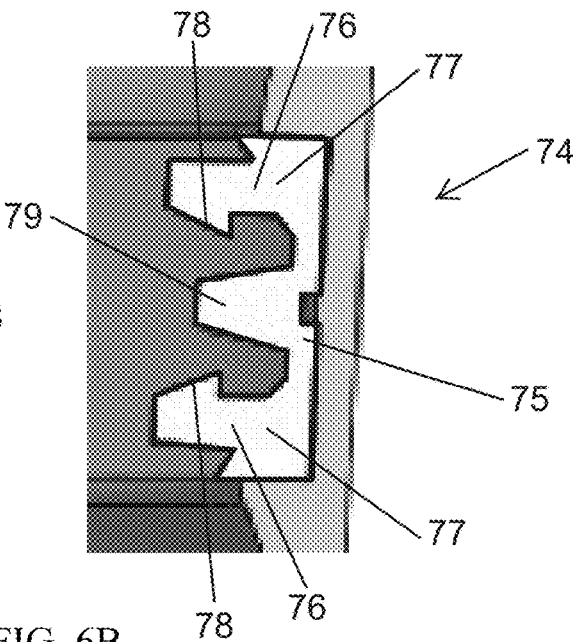


FIG. 6B



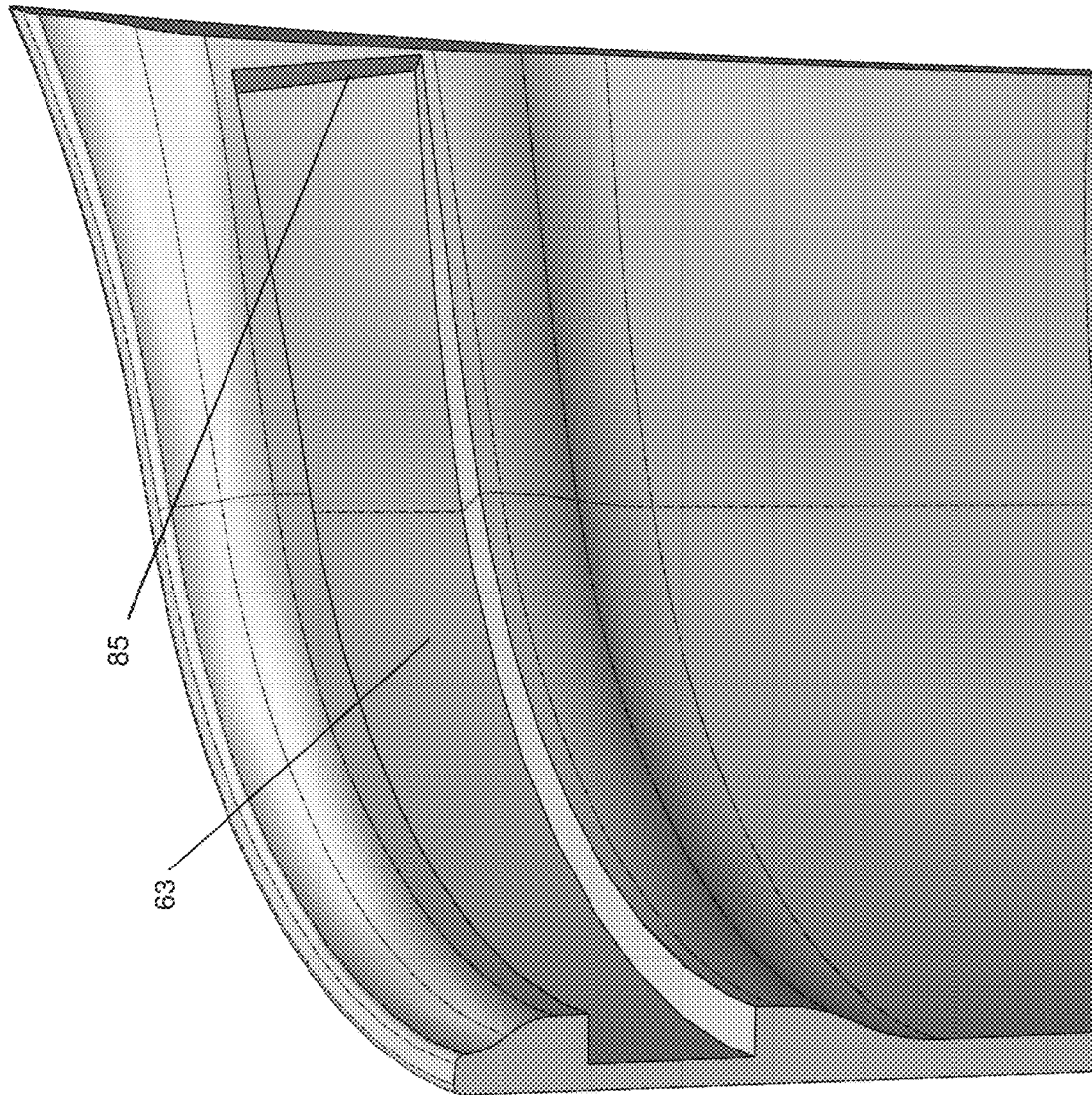


FIG. 7A



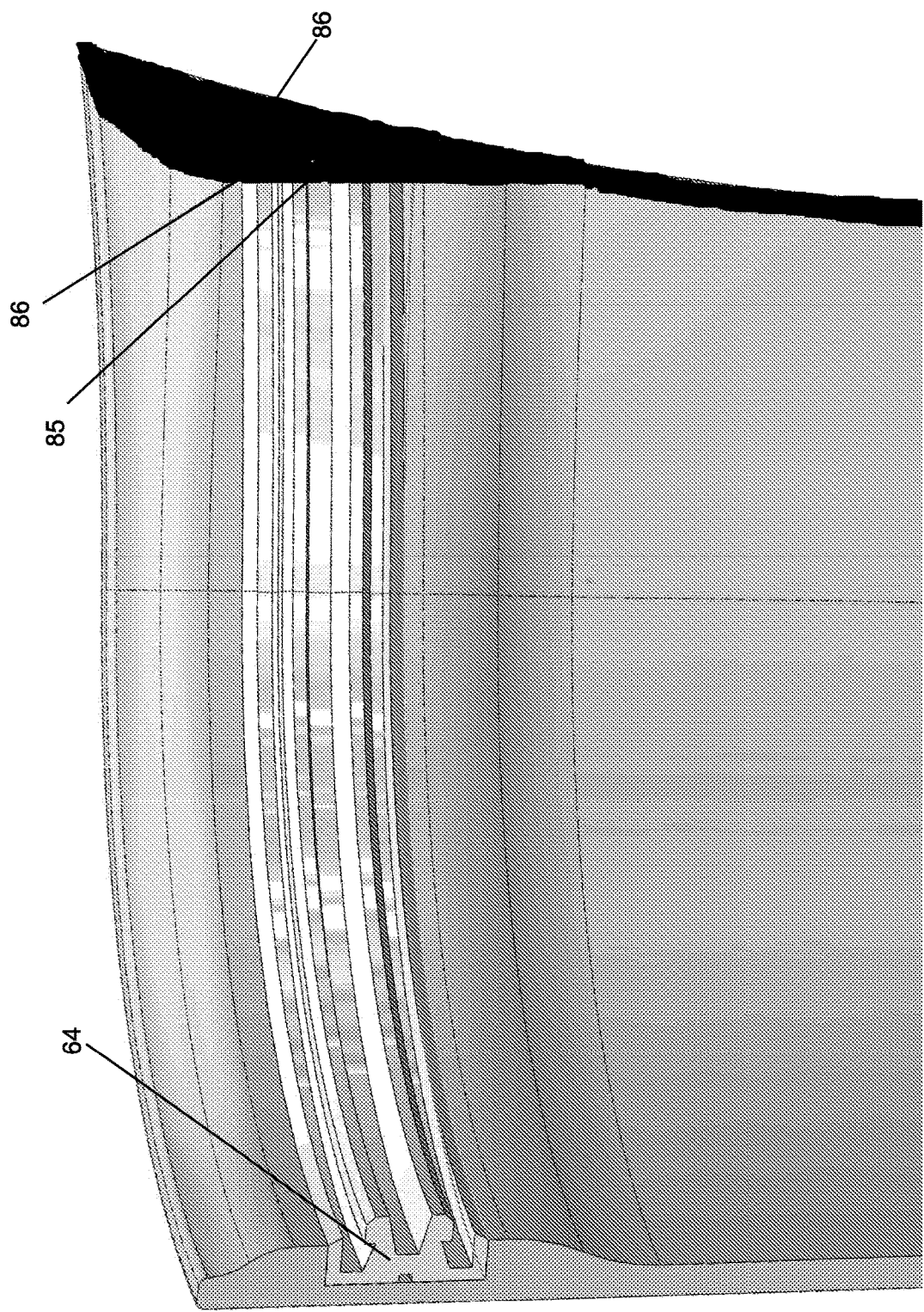


FIG. 7B



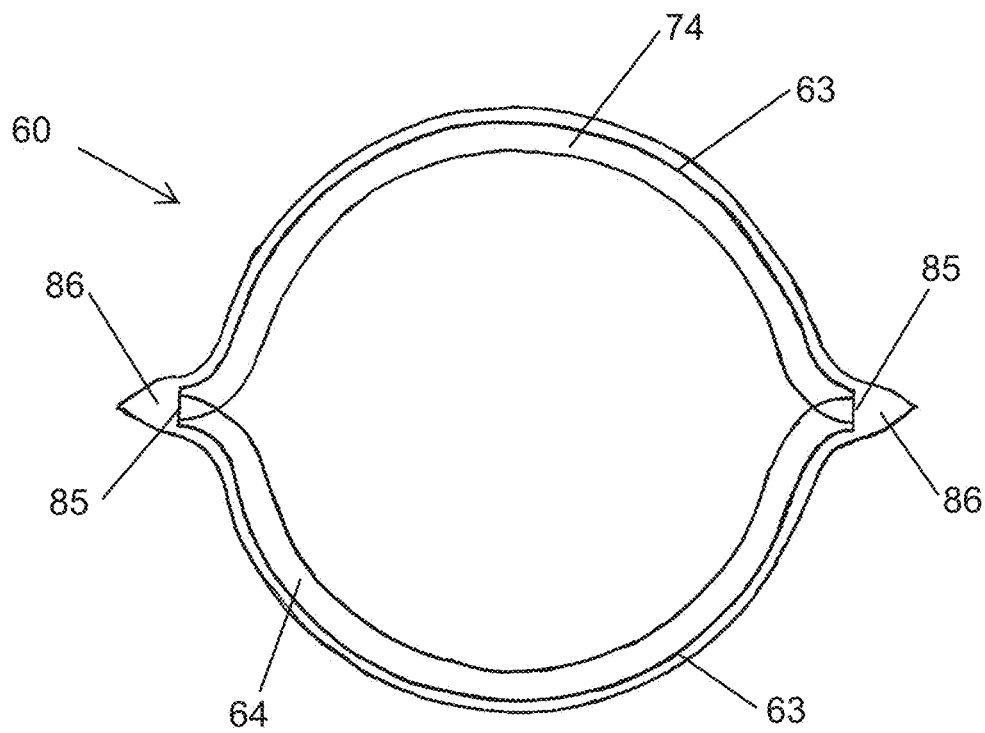


FIG. 7C

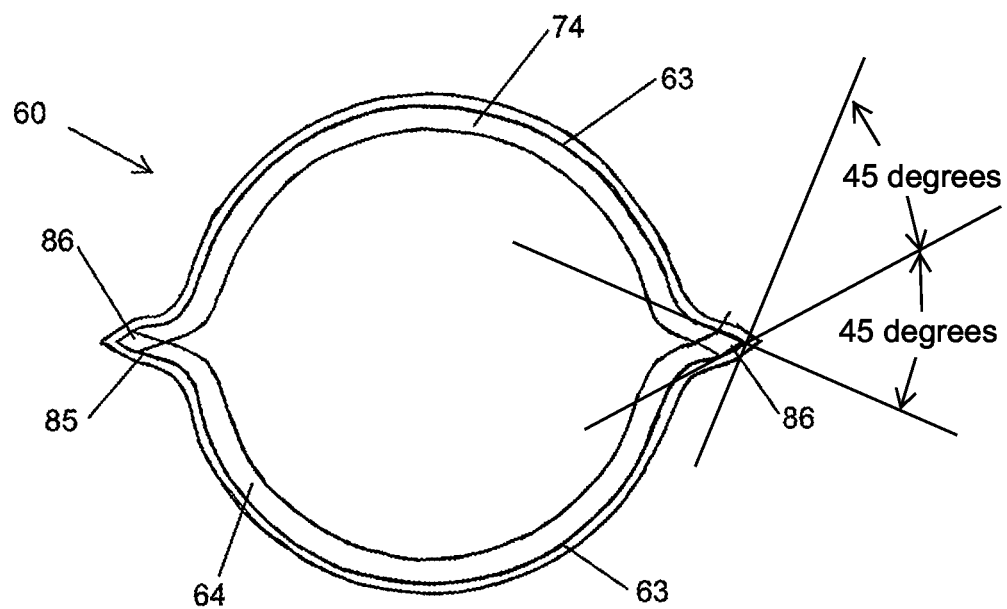


FIG. 8

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**FLEXIBLE FOODSTUFF CONTAINER WITH CLOSURE****RELATED PATENT APPLICATION**

This application claims priority to commonly owned U.S. Provisional Patent Application No. 62/466,156; filed Mar. 2, 2017, which is hereby incorporated by reference herein for all purposes.

**TECHNICAL FIELD**

The present disclosure relates generally to the field of sealable cups, bowls and tumblers made of silicone suitable for foodstuffs.

**BACKGROUND**

U.S. Pat. No. 6,197,359, incorporated herein by reference, describes the use of silicone for manufacturing of confectionery molds and baking receptacles, wherein silicone may be used for applications in contact with foodstuffs, in particular, methyl-vinyl-polysiloxane obtained by a process of cross-linking with platinum. Silicone is a material of polymeric nature whose chains are made up of alternating oxygen and silicon atoms. Silicones are normally prepared by hydrolysis and subsequent polymerisation of alkylhalogensilanes (both acid- and base-catalysed). The alkylhalogensilanes are in practice made by a direct process, Cu-catalysed, in which the Si reacts with the corresponding alkyl halide. This process provides mixtures of products, whose composition can be modified by a process of redistribution to yield the desired monomer. Known in the art are silicone elastomers, which are made up of linear polymers. A cross-linking phase is required in order to provide the elastic properties. The most common elastomers are those deriving from dichloromethylsilane, with molecular weights ranging between 300,000 and 700,000. They are made by a prepolymerisation that provides octamethylcyclotetrasiloxane, purification thereof and subsequent polymerisation in the presence of a small quantity of monofunctional material in order to control the molecular weight, followed by a cross-linking similar to curing, in the presence of peroxides, which lends the material its elastic properties. Other important elastomers are those that contain a small proportion (0.1% molar) of vinyl groups linked to silicon, which undergo much more effective curing, and those that contain between 10 and 15% molar of phenyl groups, and good elastic properties at low temperatures. Elastomers of a much lower molecular weight (10,000 to 100,000) can be obtained by using linear polymer chains ending in silanol groups, which can be cured at room temperature by reaction with an alkoxyane. In general, the most important characteristic of the silicone elastomers is the fact that they present a very broad thermal spectrum of use (from -50° C. to 200° C.) without a significant alteration of their properties. They have good electrical insulation properties, do not self-oxidise or undergo attack by chemical agents in aqueous medium and swell in the presence of non-polar organic solvents, although some special types that contain fluoro- or cyano-groups offer greater resistance to this process. Silicone elastomers find their widest industrial application as electrical insulators, fluid-repellents and oxidation protectors, and in the manufacturing of hermetic gaskets. The silicones are highly inert materials, and they repel water. Silicone is inert to chemical agents, with the exception of strong bases and acids, and its toxicity is generally low. The

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origin of these properties lies essentially in the high stability of the Si—O bond (106 Kcal/mol), and in its strong partial ionic character. Other known uses of silicones are in the manufacturing of containers for liquids (such as wineskins) and tubes for transporting substances (such as the tubes used for blood transfusions).

U.S. Publication 2014/0270579, incorporated herein by reference, discloses a silicone bag. In particular, the publication teaches a bag having a front and back portion which are comprised of silicone or a similar elastomer. The front and back portion are identical in size and are sealed together along their sides and bottom with a mouth along the top portion. The mouth creates a cavity from which items are placed in and stored or transported for further use. A sealing mechanism (ribs pressed into slots) on top of the bag seals items in the bag. The bag is molded entirely of silicone, including the sealing mechanism, to be water tight.

U.S. Publication 2014/0245698, incorporated herein by reference, discloses a package having a foldable top region. The package generally includes panel portions that at least partially define an interior cavity therebetween and accessible through an access mouth. The top portion can provide a cuff member or cuff region that can be folded and unfolded to facilitate use of the package as a bowl or other cuffed container for material contents. The package can be adapted to hold its shape as a bowl or cuffed container. A reclosure member can be provided to facilitate re-sealing of the package. A folding strip, edge contours and stiffening members can also be provided.

U.S. Publication 2009/0110335, incorporated herein by reference, discloses a reclosable food storage bag able to withstand a wide temperature range manufactured from environmentally sensitive materials is disclosed. The bag can be manufactured from such materials as silicone rubber and thermoset resins. By using such materials, the bag can easily withstand the temperature ranges encountered in residential kitchens extending from the freezer to the oven and all ambient temperatures therebetween. In addition, by manufacturing the bag from such materials, the environmental impact of using petroleum based polymers is avoided.

U.S. Pat. No. 9,371,153, incorporated herein by reference, discloses a container made of an elastomer such as silicone with an integrated leak resistant seal having press-fit elements. The sizes and shapes of the press-fit elements seal the mouth to resist leakage of liquids from inside the container. No external clips or clasps are needed for the seal. Extended flaps facilitate pulling the sides open. The container itself may be of asymmetrical shape, e.g. trapezoidal.

**SUMMARY**

In accordance with the teachings of the present disclosure, sealable cups, bowls and tumblers made of silicone suitable for foodstuffs are provided.

An aspect of the invention provides a sealable container comprising: a base having a geometric shape; sides extending from the base and defining a mouth opposite the base, wherein cross-sections of the sides parallel to the base have a geometric shape; and a seal of the mouth comprising: a first zipper member and a second zipper member, wherein when the seal is closed to seal the mouth the first and second zipper members engage each other to make the seal and when the seal is open the first and second zipper members disengage to break the seal, wherein the base, sides and seal comprise silicone, wherein the base and at least a portion of the sides adjacent the base are of sufficient thickness and rigidity for the container to freely stand vertically on its base

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with the mouth at the top, and wherein the seal and at least a portion of the sides defining the mouth are sufficiently flexible to allow the seal and side portion to be deformed between open and closed mouth configurations.

A further aspect of the invention provides a sealable container comprising: a base having a geometric shape; sides connected to the base and defining an mouth opposite the base, wherein cross-sections of the sides have a geometric shape; and a seal of the mouth, wherein the base and at least a portion of the sides adjacent the base are sufficiently rigid to resist deformation in response to applied forces, wherein the mouth and at least a portion of the sides adjacent the mouth are sufficiently flexible to allow the mouth to be deformed between open and closed configurations, and wherein the base, sides and seal are integrally formed of silicone.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the present embodiments may be acquired by referring to the following description taken in conjunction with the accompanying drawings, in which like reference numbers indicate like features.

FIGS. 1A and 1B illustrate perspective views of a short container in an open configuration.

FIGS. 1C, 1D and 1E show end, side and bottom views, respectively, of the short container of FIGS. 1A and 1B.

FIGS. 1F and 1G illustrate perspective views of a short container in a closed configuration.

FIGS. 1H, 1I and 1J show end, side and bottom views, respectively, of the short container of FIGS. 1F and 1G.

FIGS. 2A and 2B illustrate perspective views of a tumbler in an open configuration.

FIGS. 2C, 2D and 2E show end, side and bottom views, respectively, of the tumbler of FIGS. 2A and 2B.

FIGS. 2F and 2G illustrate perspective views of a tumbler in a closed configuration.

FIGS. 2H, 2I and 2J show end, side and bottom views, respectively, of the tumbler of FIGS. 2F and 2G.

FIGS. 3A and 3B illustrate perspective views of a bowl in open and closed configurations, respectively.

FIGS. 4A and 4B illustrate perspective views of a tall container in open and closed configurations, respectively.

FIG. 5 illustrates a perspective view of a tumbler in an open configuration.

FIGS. 6A and 6B show a cross-sectional end view of a portion of a tumbler, wherein enlarged views of the zipper members are shown in FIG. 6B.

FIG. 7A shows a zipper slot and a slot end in a side of a tumbler.

FIG. 7B shows a zipper member in the zipper slot and terminating at the slot end.

FIG. 7C shows a cross-sectional top view of a tumbler taken at the zipper members and zipper slot, wherein the zipper members terminate at a slot end.

FIG. 8 shows a cross-sectional top view of a tumbler taken at the zipper members and zipper slot, wherein the zipper members terminate in the slot tip.

#### DETAILED DESCRIPTION

Preferred embodiments are best understood by reference to FIGS. 1-8 below in view of the following general discussion. The present disclosure may be more easily understood in the context of a high level description of certain embodiments.

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Embodiments of the present invention provide a cup or a bowl that stands on its own and zips at the top like a re-sealable zipper storage bag. The cup or bowl may be made with silicone in one piece, be flexible, be food grade, and be dishwasher/microwave safe. The cup or bowl may be used as a dish/cup. The cup or bowl may be used as a storage container. In particular, the cup or bowl may be great for travel.

The material may be thicker at the base for stability. The top may be thinner and more flexible. The zipper may be a tongue and groove configuration wherein a male portion is mated with a female portion to make the seal. The zipper may be a dual zipper or triple zipper. A clasp may be assembled to the exterior of the zipper for sliding along the zipper to assist with the mouth and/or closing of the zipper.

In one embodiment, the zipper portion and the container portion may be molded as one unitary whole of the same material throughout. Alternatively, the zipper portion may be made from a harder durometer or different material inserted into the mold, so that it may be a dual-durometer or co-molded product.

In another embodiment, the zipper members may be separate pieces joined to a zipper slot of the container piece by glue, adhesive, tape, weld, bond, etc. Silicone adhesives are commercially available from LocTite, 3M and GE. Alternatively, because silicone bonds well to silicone, silicone may be used to join the zipper members to the container. According to one process, the zipper members and container may be made to adhere by placing them in contact when the silicone material is not fully crosslinked (cured) after being separately molded. In this case, it is preferable not to postbake the parts prior to performing the silicone adhesion step. Alternatively, the zipper members may first be separately molded and then placed inside the container mold so that when the container is molded, the zipper members become "overmolded" or "encapsulated" by the liquid silicone being injected in the mold to form the container, and thereby become joined to the container.

According to certain embodiments of the invention, one feature is to have a free standing container with a zipper seal of the mouth at the top, wherein the mouth remains open when unsealed. A benefit to users is that the mouth of the container remains open in a free standing position, so users may pour or spoon contents into or out of the container without having to hold open the mouth of the container. To enable this feature, the container may be silicone molded in an open position, so that the finished container naturally wants to assume an open position. The zipper members may be silicone molded in straight molds so that by themselves they naturally tend to assume straight positions. When the zipper members are then joined in the zipper slots of the container, the combination tends to cause the mouth of the container to naturally assume an open eye-shape when free-standing.

The figures show perspective, side and end views of separate cups, bowls or containers. Each cup, bowl or container is made of a flexible material that is sufficiently rigid in the base regions to stand on their own, but sufficiently flexible in the closure region to allow the mouths to transition between open and closed configurations.

FIGS. 1A-1J show perspective, side and end views of a short container. The short container 10 comprises a base 11 that is generally oval in shape. The short container 10 further comprises a mouth 12 at the top, wherein the mouth is generally circular when open and general linear when closed. The base 11 comprises a wall thickness and material composition that has sufficient stiffness or rigidity to resist

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deformation in response to applied forces. The mouth 12 comprises wall thicknesses and material compositions that are sufficiently flexible or pliable to allow the mouth 12 to be deformed between open and closed configurations. In one embodiment, the short container 10 may have wall thicknesses or rigidity that vary uniformly from the base 11 to the mouth 12, wherein the wall thicknesses are thicker or more rigid at the base 11 and thinner or less rigid at the mouth 12. The short container 10 may have a zipper slot 13 near the mouth 12 to seal the mouth in a closed configuration.

FIG. 1A is a perspective view of the short container 10 in an open configuration wherein the view is looking down through the mouth into the interior of the short container 10. FIG. 1B is a perspective view of the short container 10 in an open configuration wherein the view is looking up toward the base 11. FIG. 1C is an end view of the short container 10 in an open configuration, wherein the view from each end is identical. FIG. 1D is a side view of the short container 10 in an open configuration, wherein the views from both the front and back are identical. FIG. 1E is a bottom view of the short container 10 in an open configuration.

FIG. 1F is a perspective view of the short container 10 in a closed configuration wherein the view is looking down at the closed mouth 12 of the short container 10. FIG. 1G is a perspective view of the short container 10 in a closed configuration wherein the view is looking up toward the base 11. FIG. 1H is an end view of the short container 10 in a closed configuration, wherein the view from each end is identical. FIG. 1I is a side view of the short container 10 in a closed configuration, wherein the views from both the front and back are identical. FIG. 1J is a bottom view of the short container 10 in a closed configuration.

In alternative embodiments, the base 11 of the short container 10 may be any geometric shape, for example, square, rectangle, triangle, octagon, hexagon, oval, etc. Further, the mouth 12 may also be of any geometric shape. Still further, cross-sections of the short container 10 between the base 11 and the mouth 12 may be of any geometric shape. In some embodiments of the invention, the base 11, mouth 12, and cross-sections between the base 11 and mouth 12 all have the same geometric shape. In still other embodiments of the invention, the base 11, mouth 12, and cross-sections between the base 11 and mouth 12 have different geometric shapes.

FIGS. 2A-2J show perspective, side and end views of a tumbler. The tumbler 20 comprises a base 21 that is generally circular in shape. The tumbler 20 further comprises a mouth 22 at the top, wherein the mouth is generally circular when open and general linear when closed. The base 21 comprises a wall thickness and material composition that has sufficient stiffness or rigidity to resist deformation in response to applied forces. The mouth 22 comprises wall thicknesses and material compositions that are sufficiently flexible or pliable to allow the mouth 22 to be deformed between open and closed configurations. The tumbler 20 may have a zipper slot 23 near the mouth 22 to seal the mouth in a closed configuration. The tumbler 20 may have wall thicknesses and rigidity that vary uniformly from the base 21 to the mouth 22, wherein the wall thicknesses are thicker or more rigid at the base 21 and thinner or less rigid at the mouth 22.

FIG. 2A is a perspective view of the tumbler 20 in an open configuration wherein the view is looking down through the mouth into the interior of the bowl 20. FIG. 2B is a perspective view of the tumbler 20 in an open configuration wherein the view is looking up toward the base 21. FIG. 2C is an end view of the tumbler 20 in an open configuration,

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wherein the view from each end is identical. FIG. 2D is a side view of the tumbler 20 in an open configuration, wherein the views from both the front and back are identical. FIG. 2E is a bottom view of the tumbler 20 in an open configuration.

FIG. 2F is a perspective view of the tumbler 20 in a closed configuration wherein the view is looking down at the closed mouth 22 of the tumbler 20. FIG. 2G is a perspective view of the tumbler 20 in a closed configuration wherein the view is looking up toward the base 21. FIG. 2H is an end view of the tumbler 20 in a closed configuration, wherein the view from each end is identical. FIG. 2I is a side view of the tumbler 20 in a closed configuration, wherein the views from both the front and back are identical. FIG. 2J is a bottom view of the tumbler 20 in a closed configuration.

In alternative embodiments, the base 21 of the tumbler 20 may be any geometric shape, for example, square, rectangle, triangle, octagon, hexagon, oval, etc. Further, the mouth 22 may also be of any geometric shape. Still further, cross-sections of the tumbler 20 between the base 21 and the mouth 22 may be of any geometric shape. In some embodiments of the invention, the base 21, mouth 22, and cross-sections between the base 21 and mouth 22 all have the same geometric shape. In still other embodiments of the invention, the base 21, mouth 22, and cross-sections between the base 21 and mouth 22 have different geometric shapes.

FIG. 3A is a perspective view of the bowl 30 in an open configuration wherein the view is looking down through the mouth 32 into the interior of the bowl 30. A zipper slot 33 is just inside the mouth 32. The bowl 30 stands vertically upright on a base 31. FIG. 3B is a perspective view of the bowl 30 in a closed configuration wherein the view is looking down at the closed mouth 32 of the bowl 30.

FIG. 4A is a perspective view of a tall container 40 in an open configuration wherein the view is looking down through the mouth 42 into the interior of the tall container 40. The tall container 40 stands vertically on its base 41 with the mouth 42 at the top. A zipper slot 43 is just inside the mouth 42. FIG. 4B is a perspective view of the tall container 40 in a closed configuration wherein the view is looking down at the closed mouth 42 of the tall container 40.

FIG. 5 shows a perspective view of a tumbler 50. The tumbler 50 comprises a base 51 that is circular in shape. The tumbler 50 further comprises a mouth 52 at the top, wherein the mouth 52 is generally circular when open and generally linear when closed. The tumbler 50 further comprises a rim 54 between the base 51 and the mouth 52. The tumbler 50 comprises a lower wall 55 between the base 51 and the rim 54 having a thickness and material composition that has sufficient stiffness or rigidity to resist deformation in response to applied forces, so that the tumbler 50 may freely stand vertically on its base 51. Further, the tumbler 50 has an upper wall 56 between the base 51 and the rim 54 having a wall thickness and material composition sufficiently flexible or pliable to allow the mouth 52 to be deformed between open and closed configurations. In one embodiment, the circumference of the upper wall 56 above the rim 54 may be larger than the circumference of the lower wall 55 below the rim 54, so that the upper wall 56 may be rolled or folded down over the exterior of the lower wall 55 below the rim 54. In a rolled or folded down configuration, the bowl 50 may more fully function as a traditional bowl. To seal the bowl 50, the upper wall 56 may be unrolled or unfolded to an extended position, as shown in FIG. 5, and a zipper in the zipper slot 53 may be zipped to form a seal. Embodiments of a container, cup or bowl may be similar to the tumbler 50 shown in FIG. 5.



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Some embodiments of the invention, made of silicone, have base and sidewall thicknesses greater than 0.5 mm. Other embodiments of the invention, made of silicone, have base and sidewall thicknesses between about 0.7 mm and about 1.3 mm. Still further embodiments of the invention, made of silicone, have base and sidewall thicknesses of about 1.0 mm.

The tumblers, cups or bowls may be made of silicone material that is either transparent or opaque and made to be any color. The silicone may be of a quality and composition appropriate for applications in contact with foodstuffs. In particular, methyl-vinyl-polysiloxane obtained by a process of cross-linking with platinum may be an appropriate silicone. Numeric markers may be added to indicate volumetric measurements within the cups, bowls or tumblers.

FIG. 6A shows a cross-sectional end view of an upper portion of a tumbler 60. An outward hook zipper member 64 is in the left zipper slot 63. An inward hook zipper member 67 is in the right zipper slot 63. The inward and outward hook zipper members 64 and 67 may be secured in the zipper slot 63 by any means known to persons of skill, such as gluing, bonding, fusing, etc. or simply molding the zipper members with the tumbler 60 as a unitary whole.

FIG. 6B shows enlarged views of the outward hook zipper member 64 and inward hook zipper member 67 of FIG. 6A. The outward hook zipper member 64 has a base 65 that is positioned in the zipper slot 63. From a central portion of the base 65, two hooks 66 extend toward an interior of the tumbler 60. Each hook 66 has a hook cantilever 67 and a hook retainer 68, wherein the hook cantilevers 67 extend substantially perpendicular from the base 65, and the hook retainers 68 extend from the distal ends of the hook cantilevers 67 substantially parallel to the base 65. The outward hook zipper member 64 is called "outward hook" because the hook retainers 68 extend in opposite directions from each other outward from a center or middle of the member. The outward hook zipper member 64 further comprises two support cantilevers 69 extending from opposite ends of the base 65.

FIG. 6B further illustrates that the inward hook zipper member 74 has a base 75 that is positioned in the zipper slot 63 opposite the outward hook zipper member 64. From the opposite end portions of the base 75, two hooks 76 extend toward an interior of the tumbler 60. Each hook 76 has a hook cantilever 77 and a hook retainer 78, wherein the hook cantilevers 77 extend substantially perpendicular from the base 75, and the hook retainers 78 extend from the distal ends of the hook cantilevers 77 substantially parallel to the base 75. The inward hook zipper member 74 is called "inward hook" because the hook retainers 78 extend in opposite directions toward each other and inward toward a center or middle of the member. The inward hook zipper member 74 further comprises a support cantilever 79 extending from a central portion of the base 75.

With reference to FIGS. 6A and 6B, the zipper members mate to seal the tumbler 60 by interlocking the hook retainers. In particular, the hooks 66 of the outward hook zipper member 64 are inserted into the respective corresponding spaces between the hooks 76 and the support cantilever 79 of the inward hook zipper member 74. Simultaneously, the hooks 76 of the inward hook zipper member 74 are inserted into the respective corresponding spaces between the hooks 66 and the support cantilevers 69. The hooks 66 and 76 are inserted into the spaces until the hook retainers 68 engage behind the hook retainers 78 and vice versa. The hook retainers 78 are supported to remain engaged with each other by the support cantilevers 69 and

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79. In particular, the support cantilevers 69 press against the back sides of the hook retainers 78 to support the hook retainers 78 in engagement with the hook retainers 68. Similarly, the support cantilever 79 extends between the hooks 66 to provide support to the back sides of the hook retainers 68 to support the hook retainers 68 in engagement with the hook retainers 78. The support cantilever 79 has angled side-walls so as to wedge between the hooks 66.

Because the zipper members are made of a resilient material, i.e., platinum silicone, the hooks and supports may squeeze and bend into position for sealing engagement when the mouth 62 of the tumbler 60 is closed. The resilient material further provides sufficient rigidity to maintain the seal when the mouth 62 of the tumbler 60 is closed. Still further, the resilient material is sufficiently flexible to allow the zipper members to be pulled apart to break the seal and open the mouth 62. The closure and opening force may be such that closure and opening may be performed by hand.

According to one embodiment of the invention, the zipper members have certain dimensions. The width of the zipper slot 63 and the bases 65 and 75 of the zipper members 64 and 74 may be about 9.0 mm. The heights of the hooks 66 and 76, from the bottom of the bases 65 and 75 to the most distal ends of the hook retainers 68 and 78, may be about 4.0 mm, so that the combined thickness of a zipper slot, base and hook is less than 5.0 mm. The width of the hook retainers 68 and 78 may be about 1.7 mm.

FIG. 7A shows a perspective view of one side panel of a tumbler, wherein a cross-section is taken on the left at a center of a side of the tumbler and the other cross-section is taken on the right at an end of the tumbler. The zipper slot 83 does not have a zipper member in it, for illustration purposes. The zipper slot 83 has a slot end 85.

FIG. 7B shows a perspective view of the panel of the tumbler shown in FIG. 7A, except that an outward hook zipper member 84 is in the zipper slot 83. The zipper member 84 butts against the slot end 85 and is secured to it similar to the base of the zipper member being secured in the zipper slot 83. The slot end 85 is formed by a tip 86, shown in cross-section in FIG. 7B.

FIG. 7C is a cross-sectional top view of the tumbler shown in FIGS. 7A and 7B. The inward hook zipper member 74 is positioned in the zipper slot 83 of one side of the tumbler 60. The outward hook zipper member 64 is positioned in the zipper slot 83 of the other side of the tumbler 60. The tumbler 60 has relatively thick tips 86 at opposite ends of the mouth 62. The tips 86 form the slot ends 85. Further, the tips 86 provide "handles" for a user to hold the tumbler 60 while closing the zipper members 64 and 74 together. The zipper members terminate at the slot ends 85 and are secured to the slot ends 85 to completely seal the mouth 62 of the tumbler 60 when closed. The zipper members 64 and 74 "cross over" each other at the slot ends 85 so that the hooks 66 and 76 are completely engaged at the slot ends 85, even when the mouth 62 of the tumbler 60 is open as shown in FIG. 7C. To close the mouth 62, a user simply squeezes the sides of the mouth 62 together and pinches the zipper members 64 and 74 together until the hooks 66 and 76 are completely engaged.

FIG. 8 is a cross-sectional top view of a tumbler 60. The inward hook zipper member 74 is positioned in the zipper slot 83 of one side of the tumbler 60. The outward hook zipper member 64 is positioned in the zipper slot 83 of the other side of the tumbler 60. A tip 86 is formed at each end of the mouth. The wall thicknesses in the region of the tip is approximately the same as the side walls forming the mouth 62 and the zipper slot 63. The zipper members 64 and 74

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extend all the way to the tips **86** and “cross over” each other at the tips **86**. The ends of the zipper members are angled at about 45 degrees, so that when the zipper members are closed together, they seal the zipper at the tips **86**.

Although the disclosed embodiments are described in detail in the present disclosure, it should be understood that various changes, substitutions and alterations can be made to the embodiments without departing from their spirit and scope.

What is claimed is:

1. A sealable container comprising:
  - a base having a geometric shape;
  - a plurality of sides extending from the base to form the container, wherein a cross-section of the plurality of sides parallel to the base has a geometric shape substantially the same as the geometric shape of the base, wherein the base and at least a portion of the plurality of sides adjacent the base are of sufficient thickness and rigidity to enable the container to freely stand vertically on its base;
  - a mouth defined by the sides opposite the base, the mouth comprising:
    - a first tip formed by the sides at a first end of the mouth,
    - a second tip formed by the sides at a second end of the mouth,
    - a first side of the plurality of sides extending from the first tip of the mouth to the second tip of the mouth,
    - a second side of the plurality of sides opposite the first side and extending from the first tip of the mouth to the second tip of the mouth,
  - a seal of the mouth comprising:
    - a first zipper member extending from an interior face of the first side of the plurality of sides from the first tip of the mouth to the second tip of the mouth,
    - a second zipper member extending from an interior face of the second side of the plurality of sides from the first tip of the mouth to the second tip of the mouth so that the second zipper member is opposite the first zipper member,
  - wherein at least portions of the first and second zipper members are sufficiently resilient to be sealingly engageable with each other to maintain the seal of the mouth and disengageable between the first and second tips to break the seal of the mouth,
  - wherein the mouth and seal are configured to automatically assume an open configuration when the container freely stands vertically on its base with the mouth at the top and the first and second zipper members are disengaged, the open configuration comprising an eye-shape with the first and second tips at opposite ends of the eye-shape,
  - wherein the mouth and seal are configured to assume a closed configuration when the first and second zipper members are engaged with each other, and the first and second zipper members are generally linear in the closed configuration, and
  - wherein the first and second sides adjacent the mouth and the first and second zipper members comprise wall thicknesses and material compositions that are sufficiently flexible or pliable to be deformable between the open configuration and the closed configuration, and
  - wherein at the first and second tips, ends of the first and second zipper members are angled at about 45 degrees, so that when the zipper members are engaged, they seal the mouth at the tips.
2. The sealable container, as claimed in claim 1, wherein the first and second zipper members cross over each other so

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that they are engaged at the first and second tips of the mouth when the mouth is both in the open configuration and the closed configuration.

3. The sealable container, as claimed in claim 1, wherein the base, the plurality of sides, and the seal comprise silicone.

4. The sealable container, as claimed in claim 3, wherein the silicone comprises platinum silicone.

5. The sealable container, as claimed in claim 1, wherein the first and second zipper members of the seal are joined to the interior faces of the first and second sides, respectively, by joints selected from adhesive, glue, tape, weld, bond and crosslink.

6. The sealable container, as claimed in claim 1, wherein the entire container, including the base, the plurality of sides, and the seal, comprises a unitary body, with no joints nor components joined together.

7. The sealable container, as claimed in claim 1, wherein the first and second zipper members of the seal are joined to the interior faces of the first and second sides, respectively, by portions of the seal being overmolded with silicone forming the sides.

8. The sealable container, as claimed in claim 1, wherein the first zipper member comprises a male portion and the second zipper member comprises a female portion, wherein the male and female portions are engageable and disengageable.

9. The sealable container, as claimed in claim 1, wherein the container comprises at least two portions having different durometers.

10. The sealable container, as claimed in claim 1, wherein the geometric shape of the base is circular and the geometric shape of the cross-section of the plurality of sides parallel to the base is substantially circular, and the container further comprises another cross-section of the plurality of sides parallel to the base having a substantially elliptical geometric shape.

11. The sealable container, as claimed in claim 1, wherein the geometric shape of the base comprises two straight sides and two semicircular sides and wherein the geometric shape of the cross-section of the plurality of sides parallel to the base comprises two substantially straight sides and two substantially semi-circular sides.

12. The sealable container, as claimed in claim 1, wherein the base and sides have thicknesses greater than 0.5 mm.

13. The sealable container, as claimed in claim 1, wherein the base and sides have thicknesses between 0.7 mm and 1.3 mm.

14. The sealable container, as claimed in claim 1, wherein the thickness of each of the first and second zipper members of the seal is between 4.0 mm and 5.0 mm.

15. A sealable container comprising:

- a base having a geometric shape;
- a plurality of sides extending from the base to form the container, wherein a cross-section of the plurality of sides parallel to the base has a geometric shape substantially the same as the geometric shape of the base, wherein the base and at least a portion of the plurality of sides adjacent the base are between 0.7 mm and 1.3 mm thick and have sufficient rigidity to enable the container to freely stand vertically on its base;
- a mouth defined by the sides opposite the base, the mouth comprising:
  - a first tip formed by the sides at a first end of the mouth,
  - a second tip formed by the sides at a second end of the mouth,

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a first side of the plurality of sides extending from the first tip of the mouth to the second tip of the mouth, a second side of the plurality of sides opposite the first side and extending from the first tip of the mouth to the second tip of the mouth,

a seal of the mouth comprising:

a first zipper member extending from an interior face of the first side of the plurality of sides from the first tip of the mouth to the second tip of the mouth,

a second zipper member extending from an interior face of the second side of the plurality of sides from the first tip of the mouth to the second tip of the mouth so that the second zipper member is opposite the first zipper member,

wherein at least portions of the first and second zipper members are sufficiently resilient to be sealingly engageable with each other to maintain the seal of the mouth and disengageable between the first and second tips to break the seal of the mouth,

wherein the mouth and seal are configured to automatically assume an open configuration when the container freely stands vertically on its base with the mouth at the top and the first and second zipper members are disengaged, the open configuration comprising an eye-shape with the first and second tips at opposite ends of the eye-shape,

wherein the mouth and seal are configured to assume a closed configuration when the first and second zipper members are engaged with each other, and the first and second zipper members are generally linear in the closed configuration,

wherein the first and second sides adjacent the mouth and the first and second zipper members comprise wall thicknesses and material compositions that are sufficiently flexible or pliable to be deformable between the open configuration and the closed configuration, and

wherein at the first and second tips, ends of the first and second zipper members are angled at about 45 degrees, so that when the zipper members are engaged, they seal the mouth at the tips, and

wherein the first and second zipper members cross over each other so that they are engaged at the first and second tips of the mouth when the mouth is both in the open configuration and the closed configuration.

16. The sealable container, as claimed in claim 15, wherein the base, the plurality of sides, and the seal comprise silicone.

17. The sealable container, as claimed in claim 15, wherein the entire container, including the base, the plurality of sides, and the seal, comprises a unitary body, with no joints nor components joined together.

18. A silicone sealable container comprising:

a silicone base having a geometric shape;

a plurality of silicone sides extending from the base to form the container, wherein a cross-section of the plurality of silicone sides parallel to the base has a geometric shape substantially the same as the geometric shape of the base, wherein the base and at least a portion of the plurality of sides adjacent the base are

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between 0.7 mm and 1.3 mm thick and have sufficient rigidity to enable the container to freely stand vertically on its base;

a silicone mouth defined by the sides opposite the base, the mouth comprising:

a first silicone tip formed by the sides at a first end of the mouth,

a second silicone tip formed by the sides at a second end of the mouth,

a first silicone side of the plurality of sides extending from the first tip of the mouth to the second tip of the mouth,

a second silicone side of the plurality of sides opposite the first side and extending from the first tip of the mouth to the second tip of the mouth,

a silicone seal of the mouth comprising:

a first silicone zipper member extending from an interior face of the first side of the plurality of sides from the first tip of the mouth to the second tip of the mouth,

a second silicone zipper member extending from an interior face of the second side of the plurality of sides from the first tip of the mouth to the second tip of the mouth so that the second zipper member is opposite the first zipper member,

wherein at least portions of the first and second zipper members are sufficiently resilient to be sealingly engageable with each other to maintain the seal of the mouth and disengageable between the first and second tips to break the seal of the mouth,

wherein the mouth and silicone seal are configured to automatically assume an open configuration when the container freely stands vertically on its base with the mouth at the top and the first and second zipper members are disengaged, the open configuration comprising an eye-shape with the first and second tips at opposite ends of the eye-shape,

wherein the first and second sides adjacent the mouth and the first and second zipper members are deformable between the open configuration and a closed configuration, the first and second zipper members are generally linear in the closed configuration,

wherein the mouth and seal are configured to assume the closed configuration when the first and second zipper members are engaged with each other, and the first and second zipper members are generally linear in the closed configuration,

wherein the entire container, including the silicone base, the plurality of silicone sides, and the silicone seal, comprises a unitary body, with no joints nor components joined together, and

wherein at the first and second tips, ends of the first and second zipper members are angled at about 45 degrees, so that when the zipper members are engaged, they seal the mouth at the tips.

19. The sealable container, as claimed in claim 18, wherein the container comprises at least two portions having different durometers.

\* \* \* \* \*



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(54) **SILICONE MOLDING PROCESS FOR MAKING A CONTAINER WITH ZIPPER MEMBERS TAPERED AT A FLEXIBLE SPOUT**

(71) Applicant: **ZIP TOP LLC**, Austin, TX (US)

(72) Inventors: **Rebecca Finell**, Austin, TX (US);  
**Joshua J. Nelson**, Mesa, AZ (US)

(73) Assignee: **ZIP TOP LLC**, Austin, TX (US)

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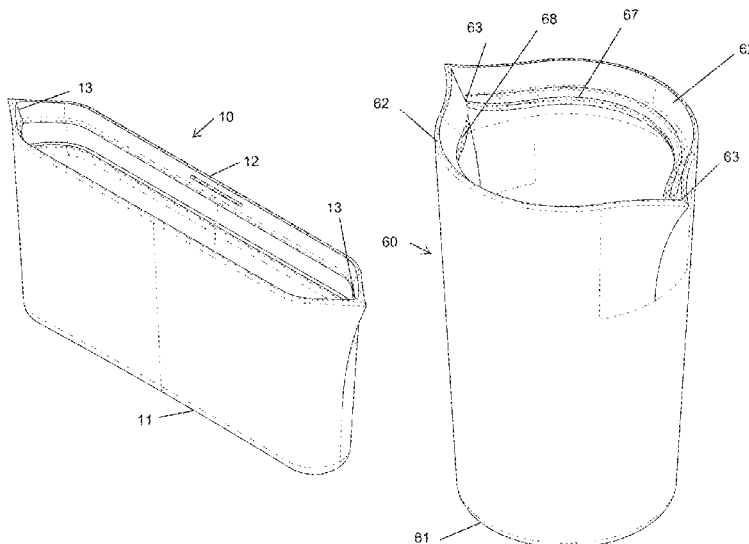
*Primary Examiner* — Edmund H Lee

(74) *Attorney, Agent, or Firm* — Slayden Grubert Beard  
PLLC

(57) **ABSTRACT**

A container comprising: a base and freestanding sides extending from the base to define a mouth opposite the base, wherein the mouth has first and second spouts opposite each other and first and second interior sides opposite each other between the first and second spouts; a first zipper member extending from the first interior side of the mouth from the first spout to the second spout; a second zipper member extending from the second interior side of the mouth from the first spout to the second spout, wherein the mouth is deformable between open and closed configurations and the first and second zipper members are disengageable when the mouth is open and engagable when the mouth is closed, wherein the base, sides, and zipper members are a unitary whole container without assembled parts, wherein the container comprises silicone.

**20 Claims, 18 Drawing Sheets**



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FIG. 1A

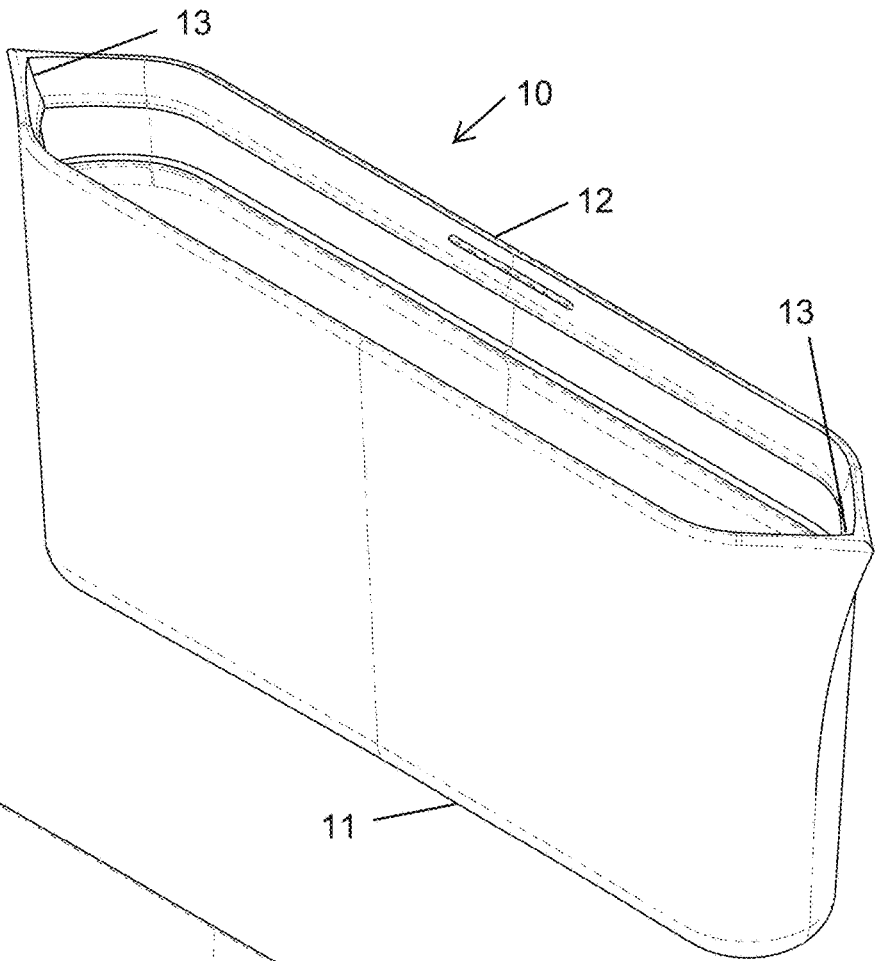
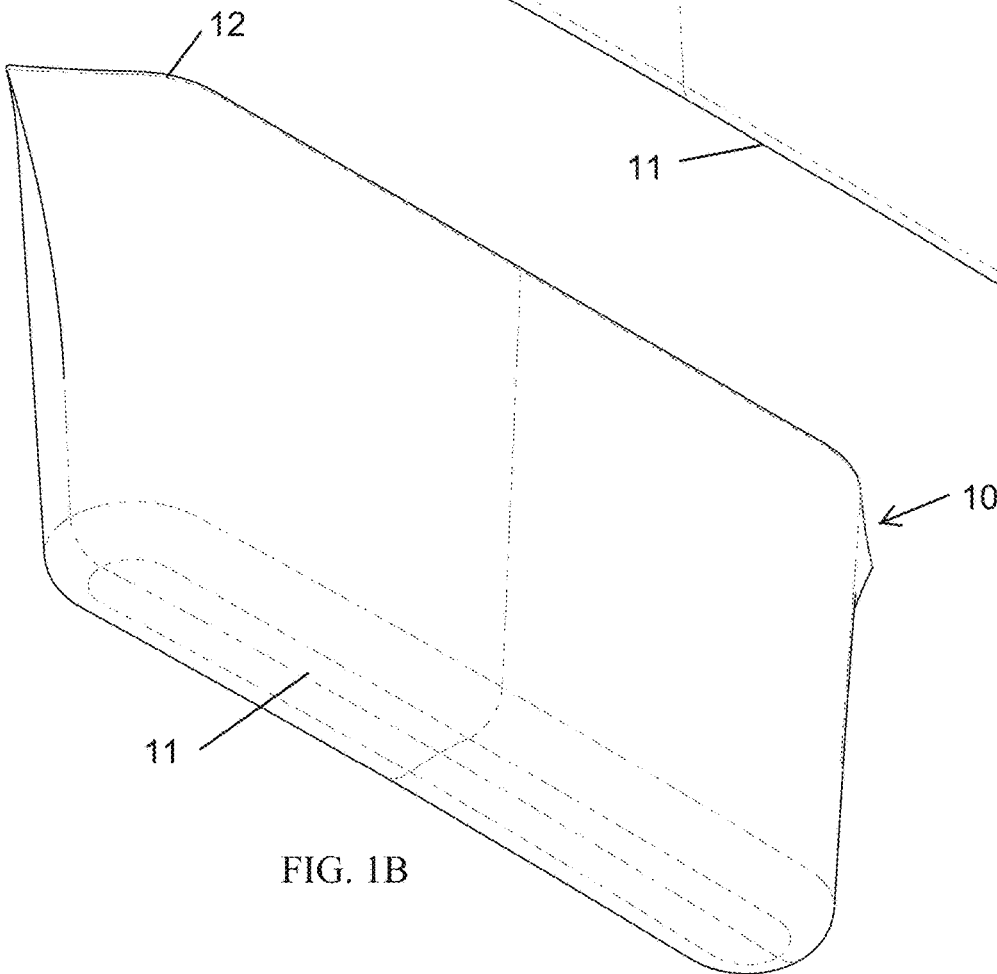


FIG. 1B



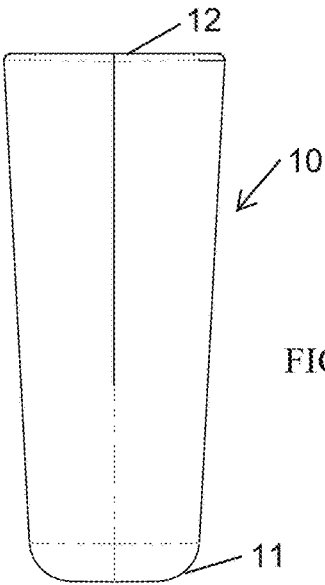


FIG. 1C

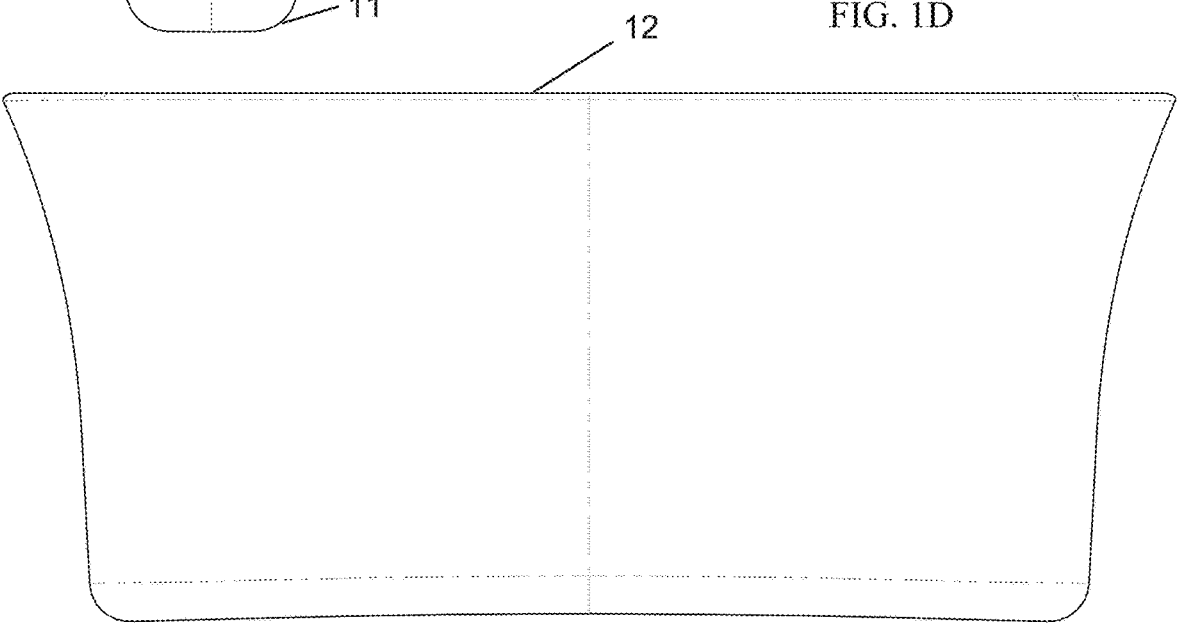


FIG. 1D

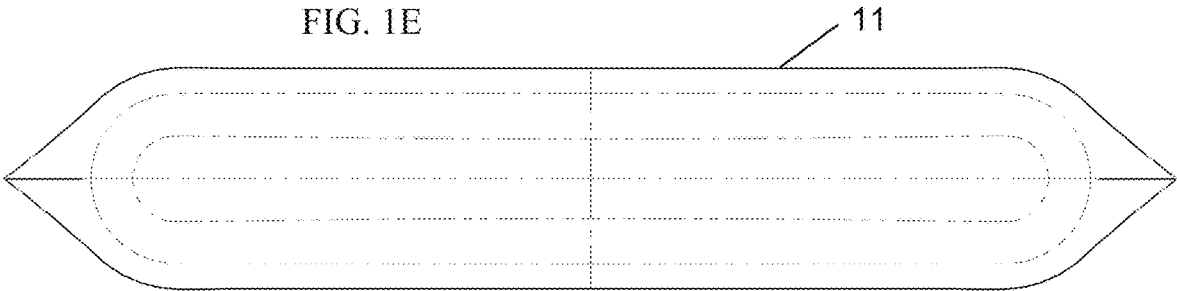
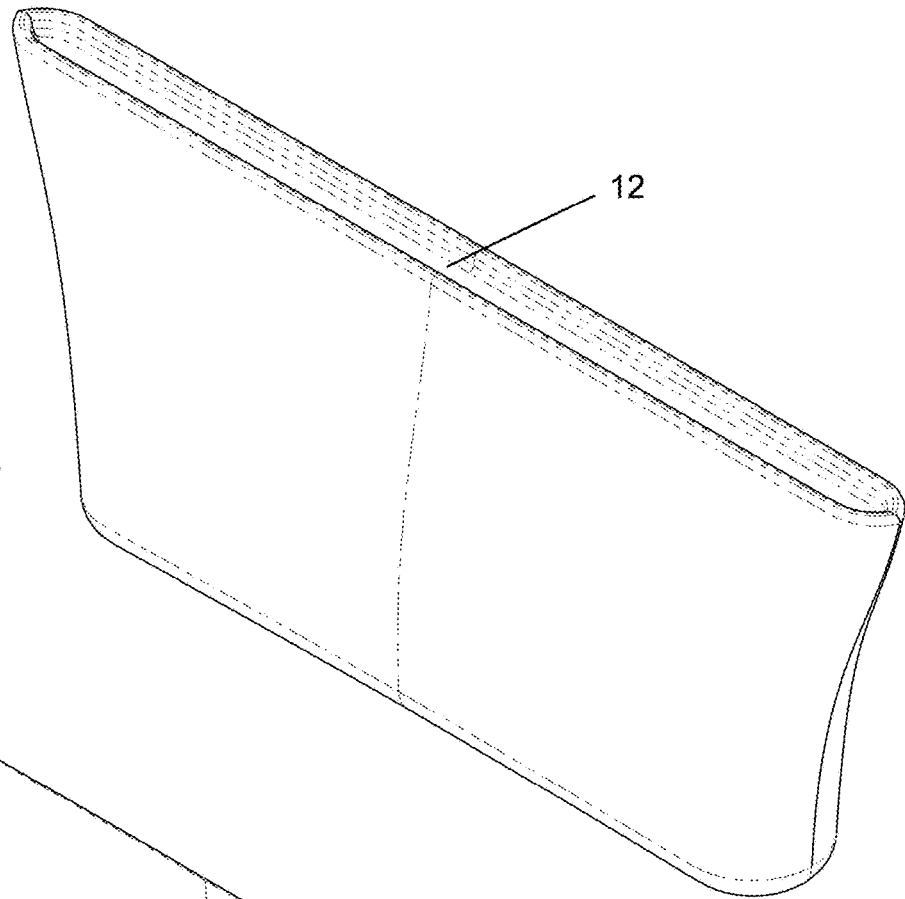


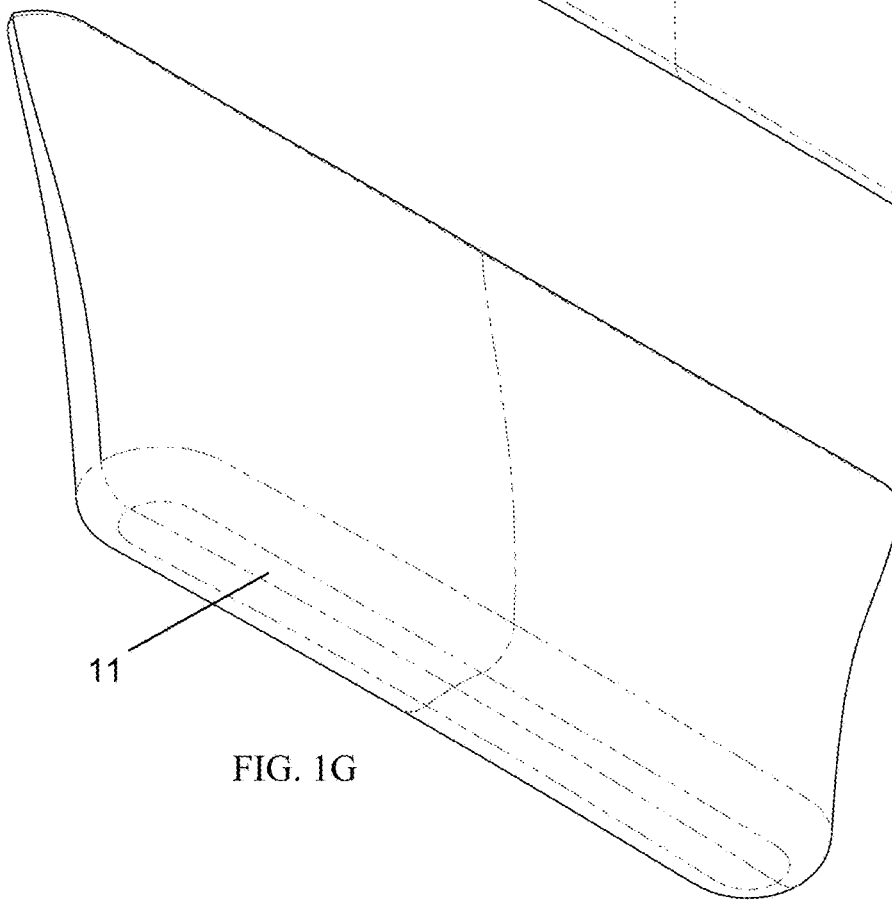
FIG. 1E

**FIG. 1F**



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**FIG. 1G**



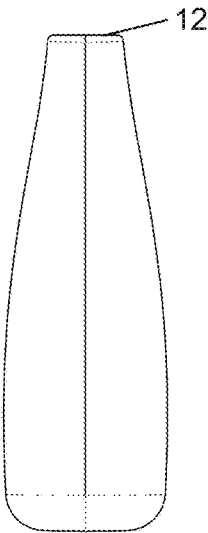


FIG. 1H

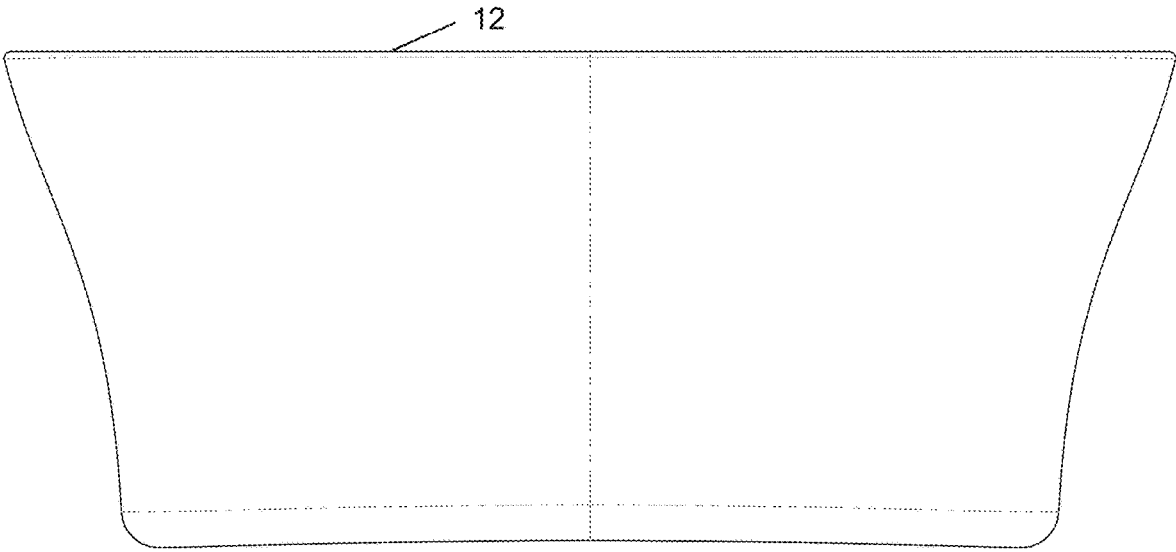


FIG. 1I

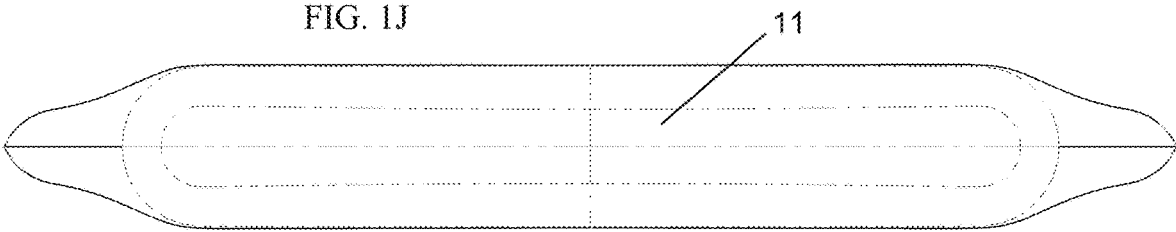


FIG. 1J



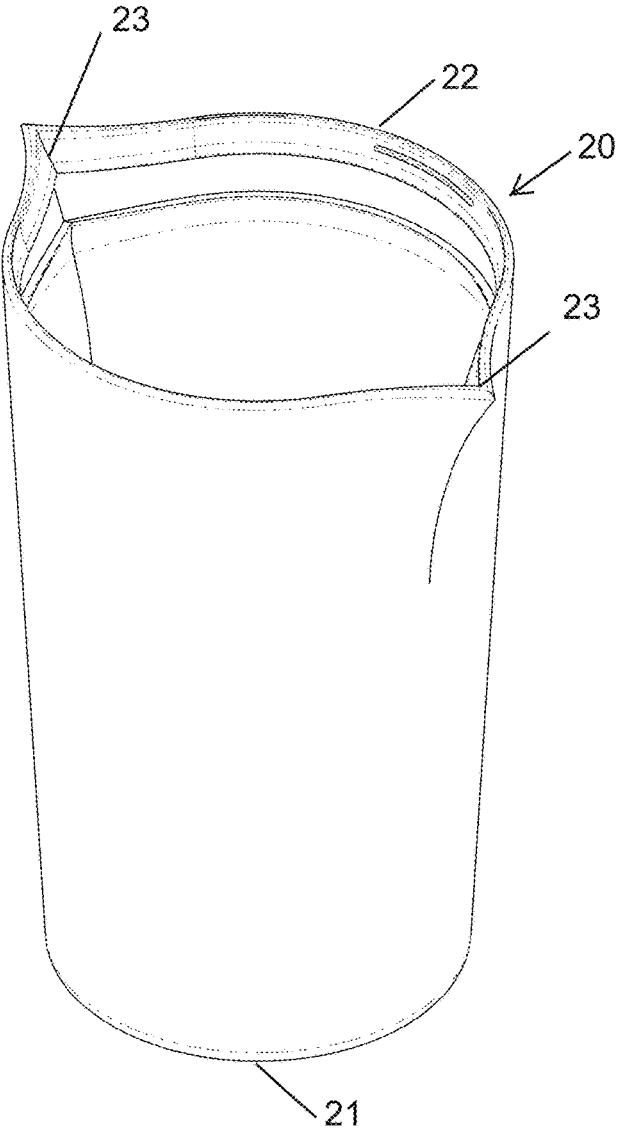


FIG. 2A

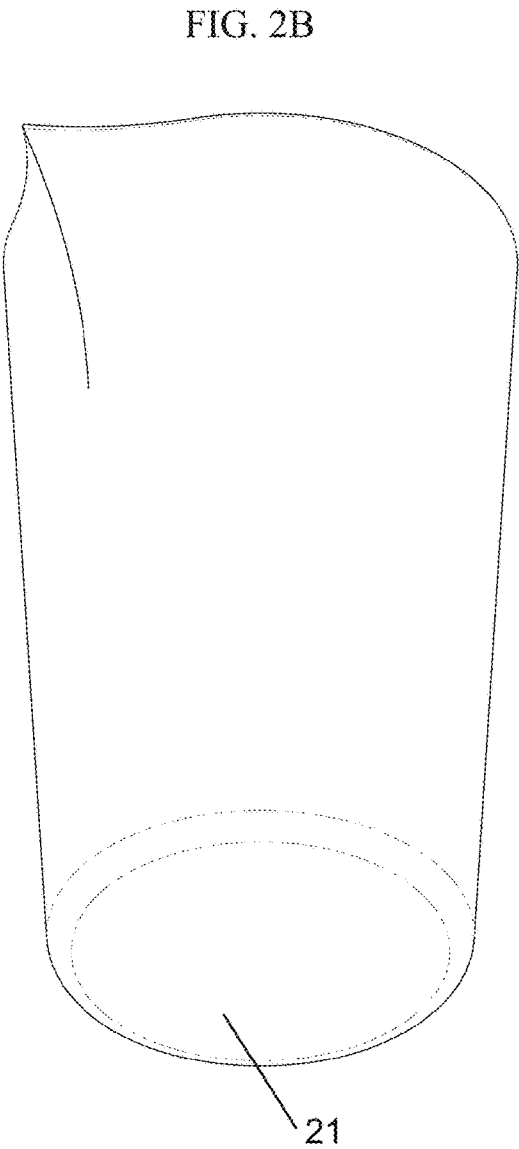


FIG. 2B

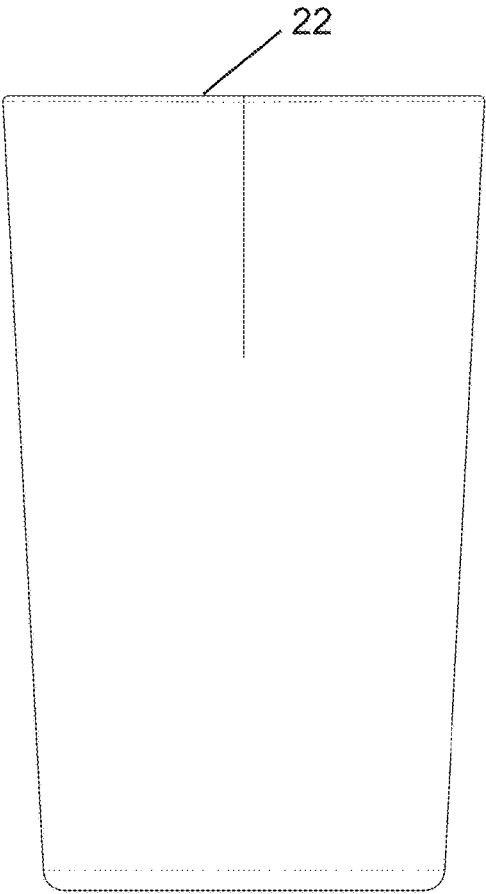


FIG. 2D

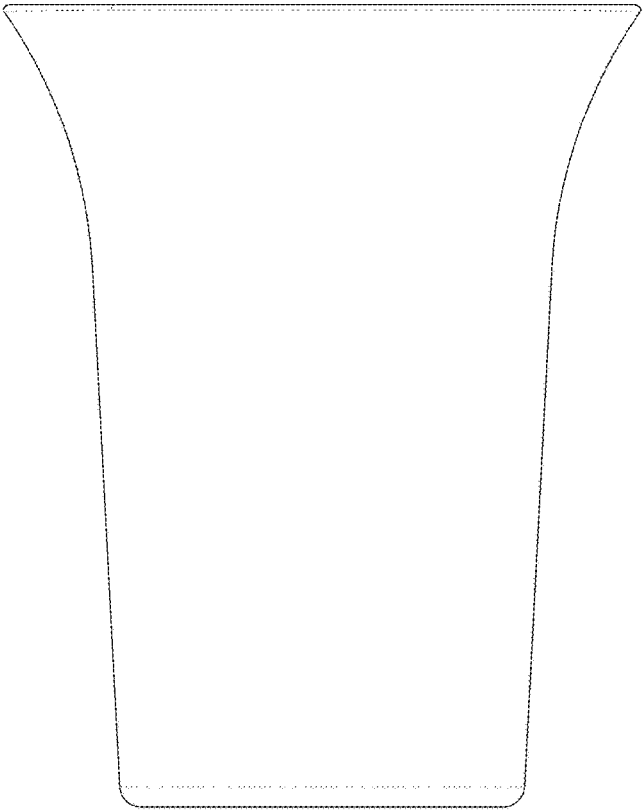


FIG. 2C

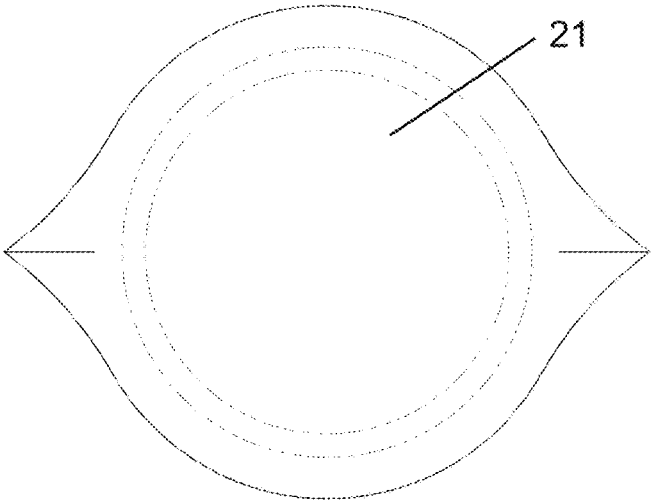
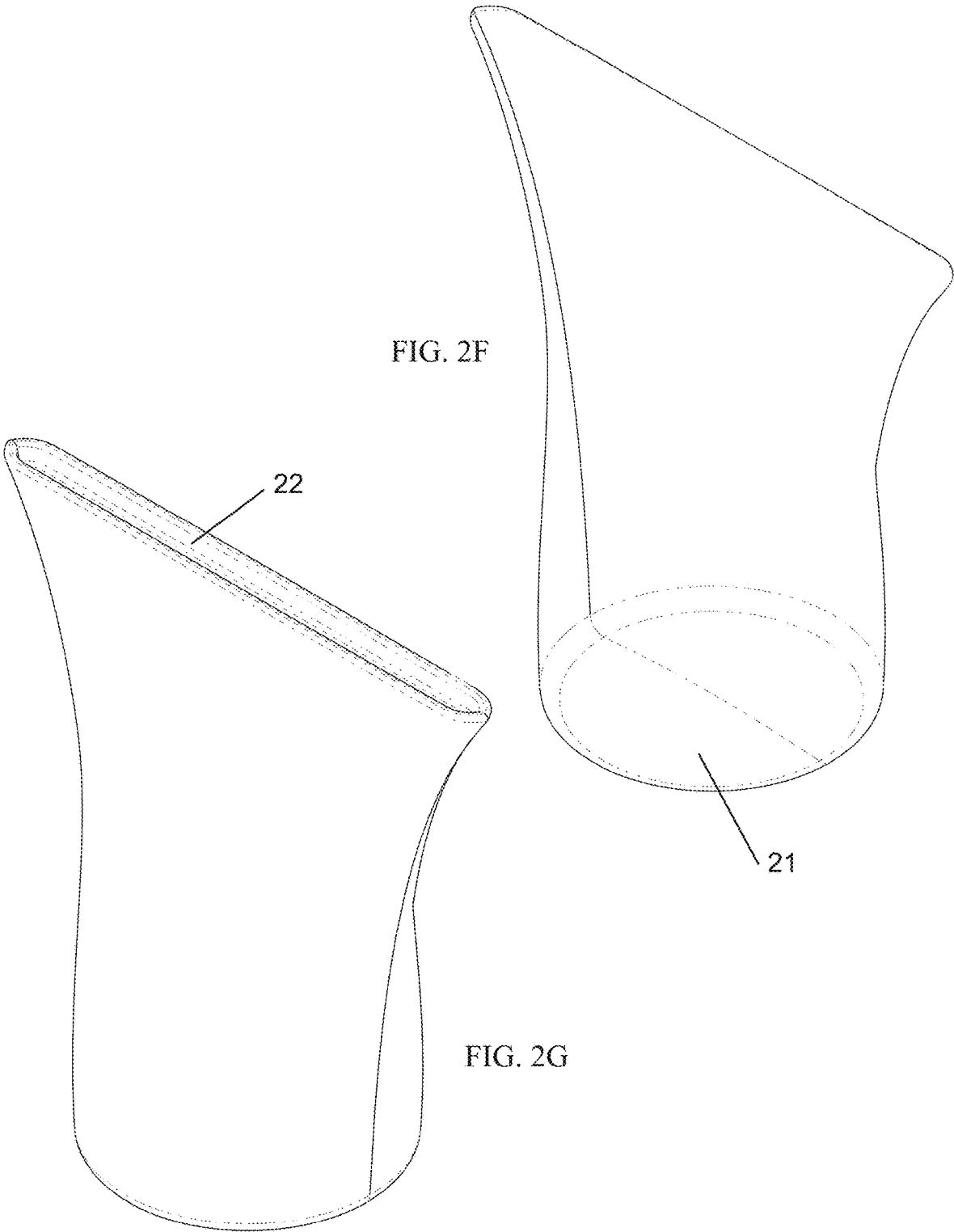


FIG. 2E



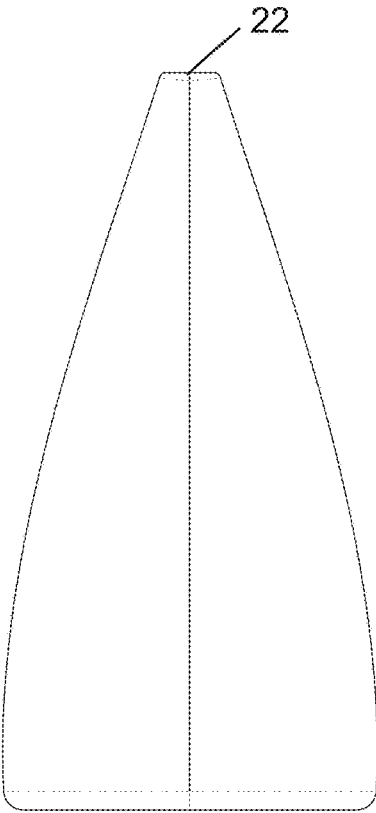


FIG. 2H

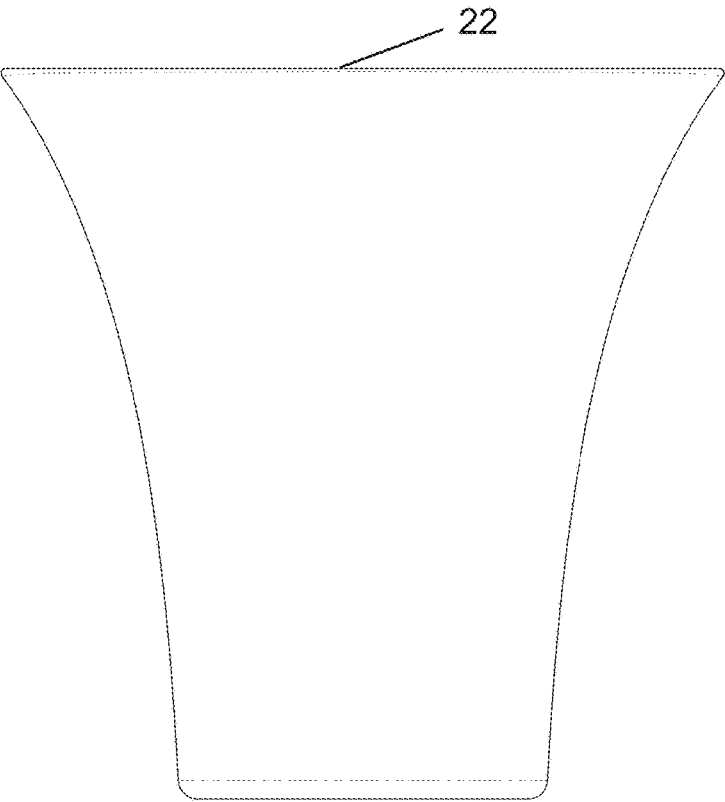


FIG. 2I

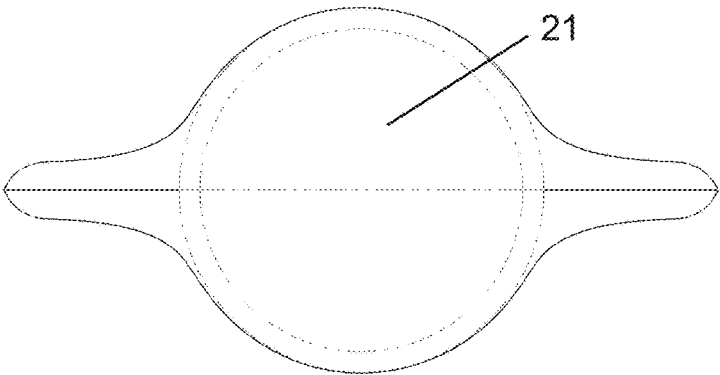
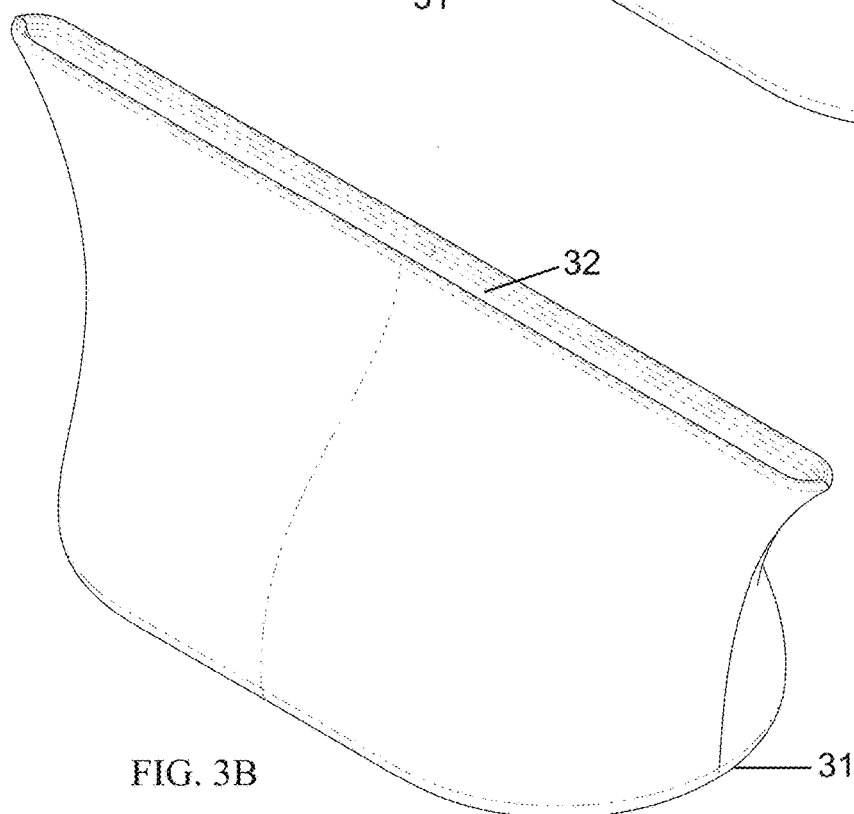
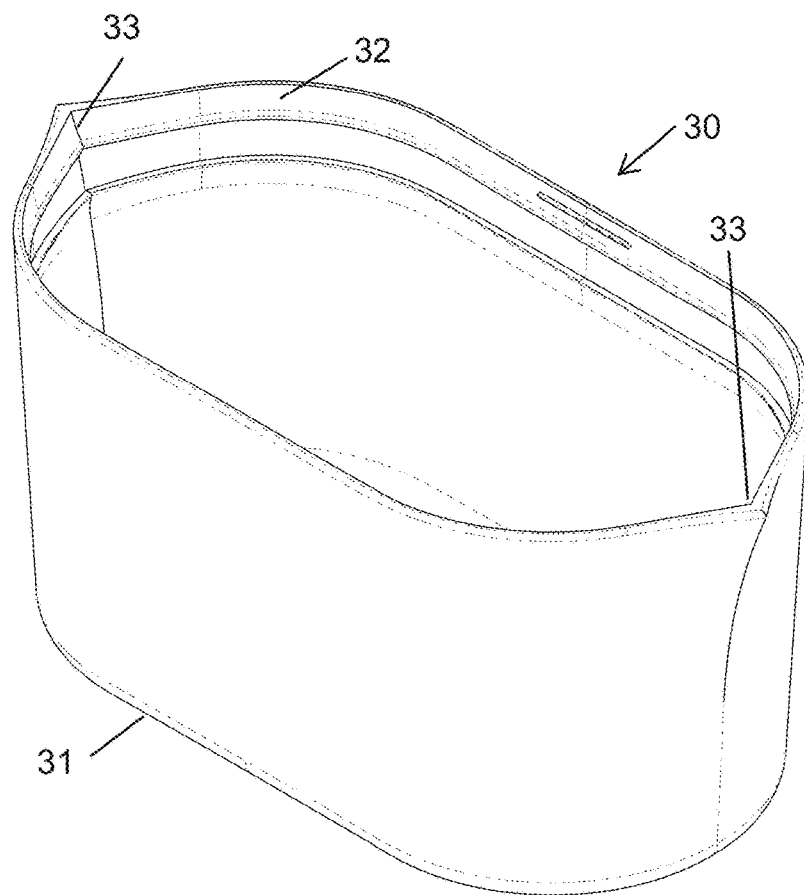
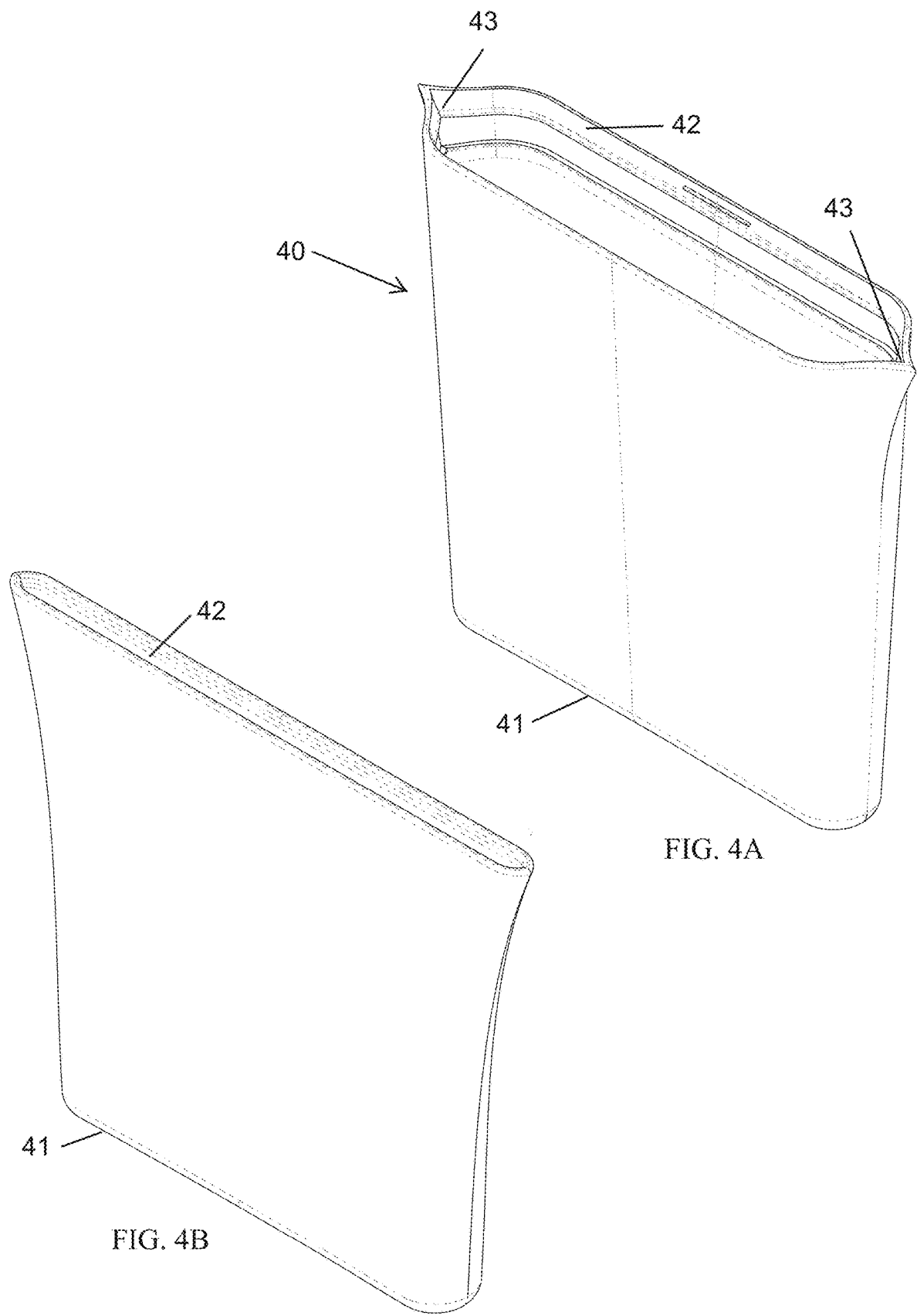


FIG. 2J







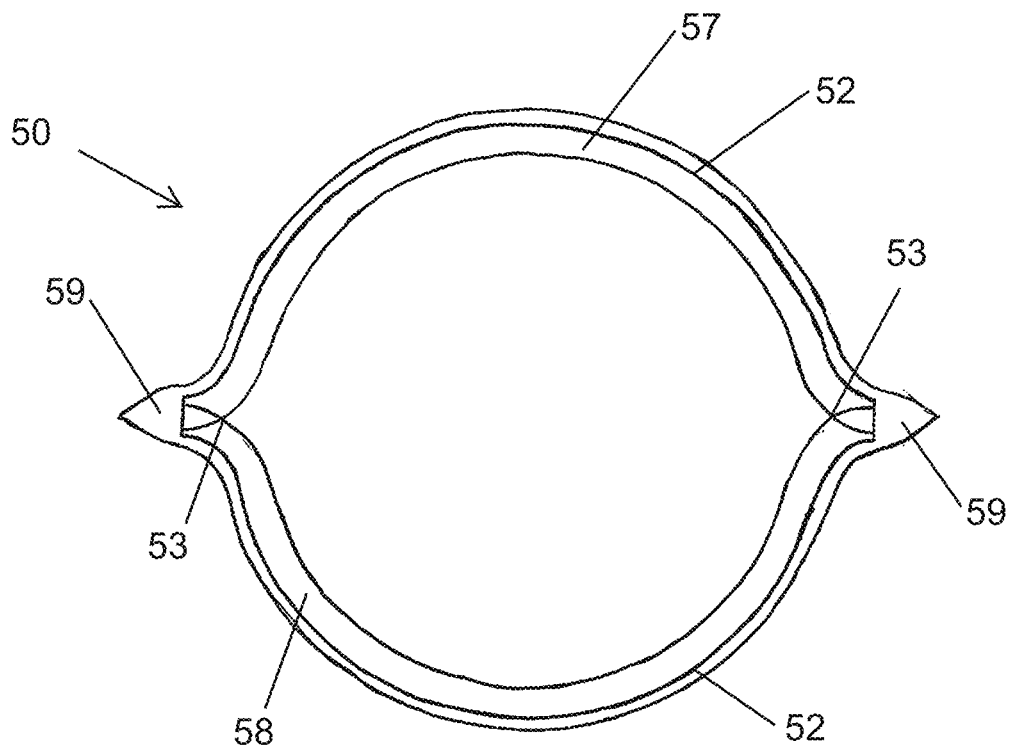


FIG. 5B



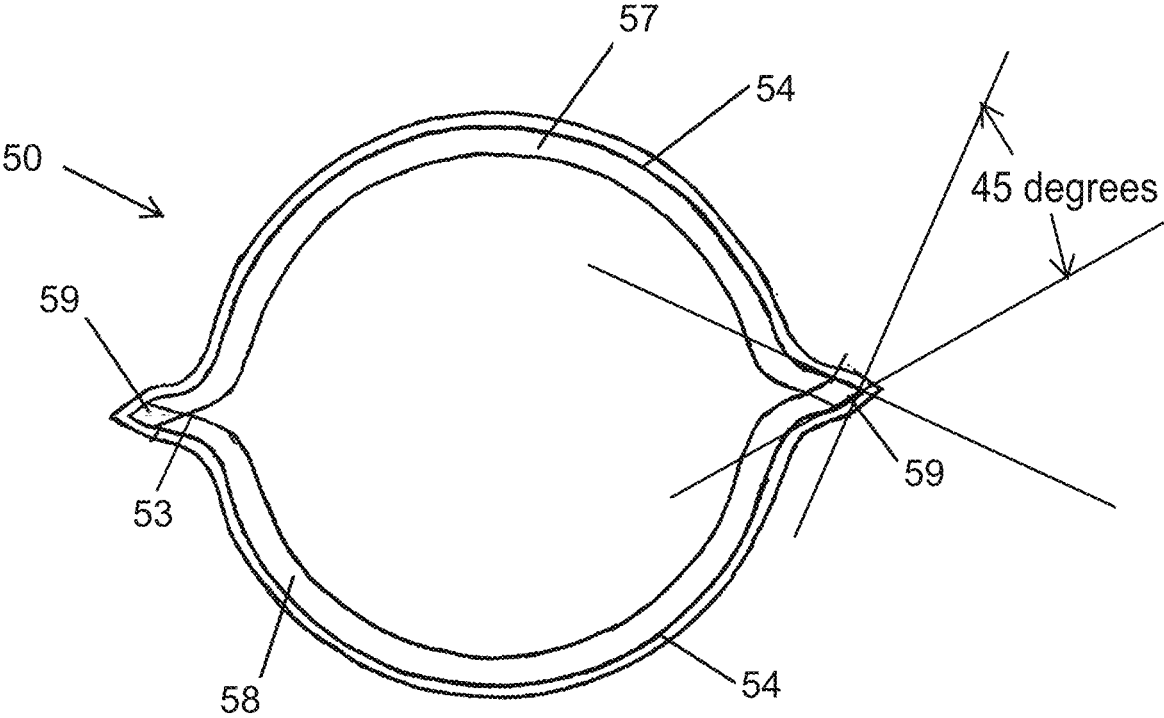


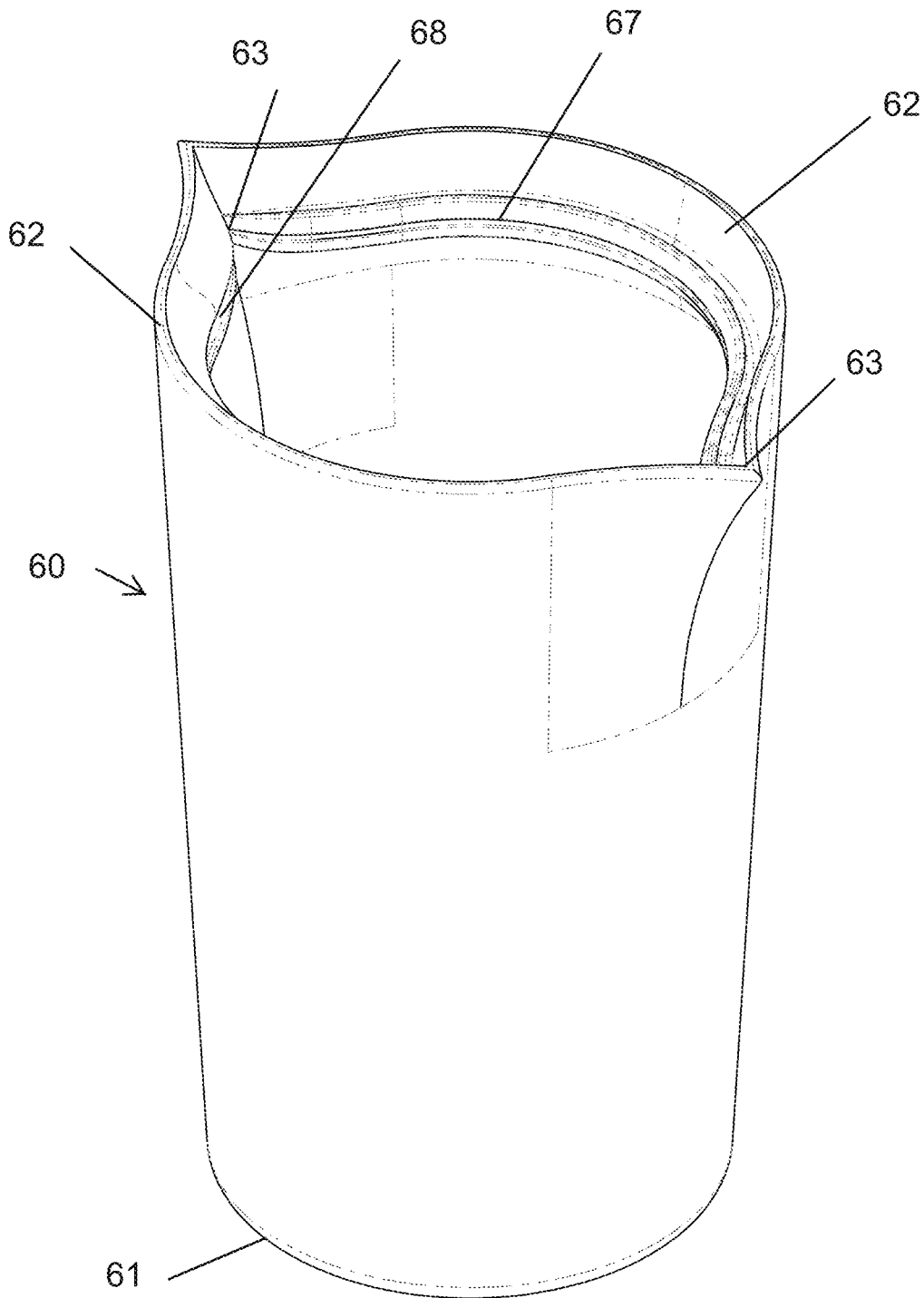
FIG. 5C

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**FIG. 6A**

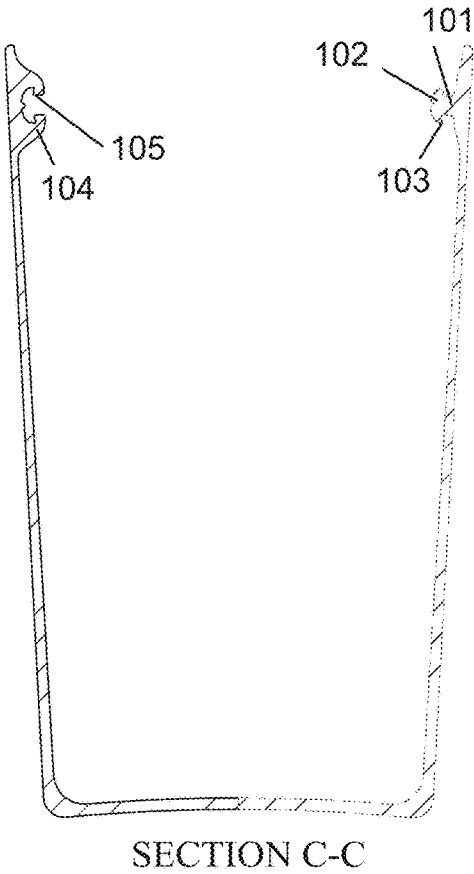
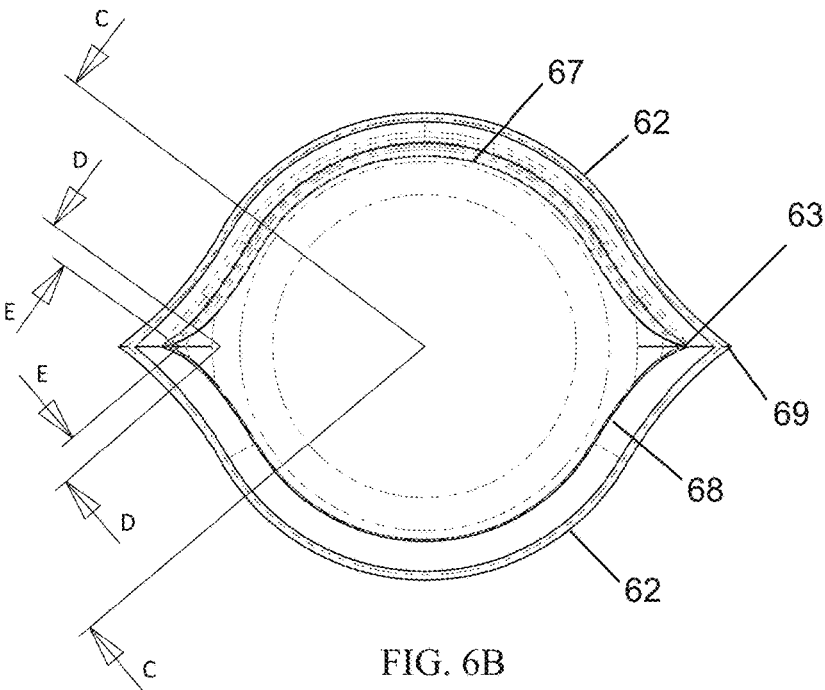
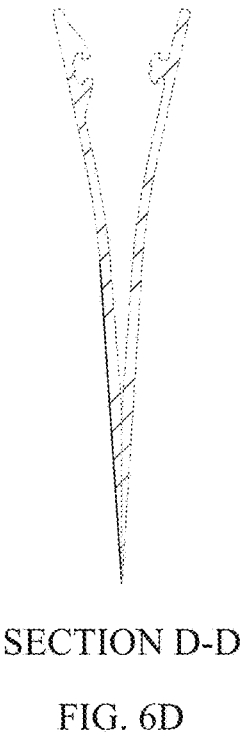


FIG. 6C



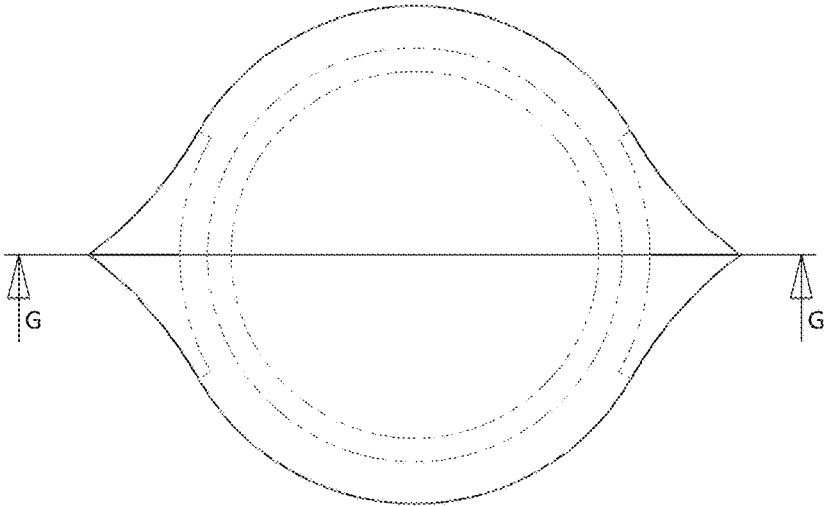
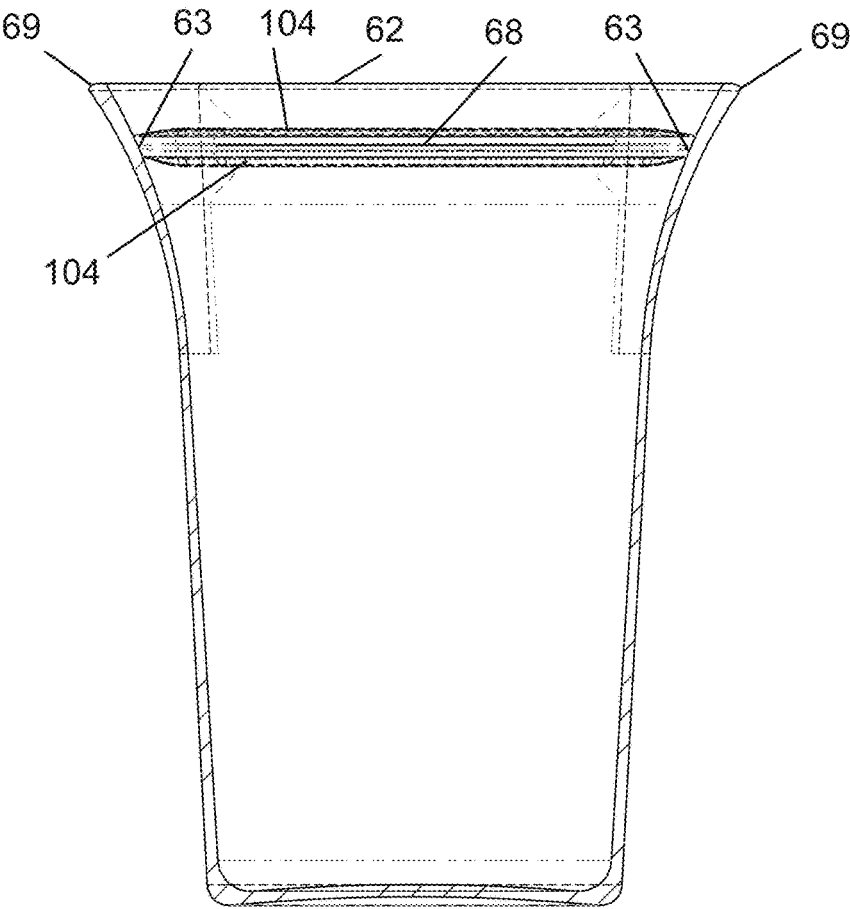


FIG. 6F



SECTION G-G

FIG. 6G

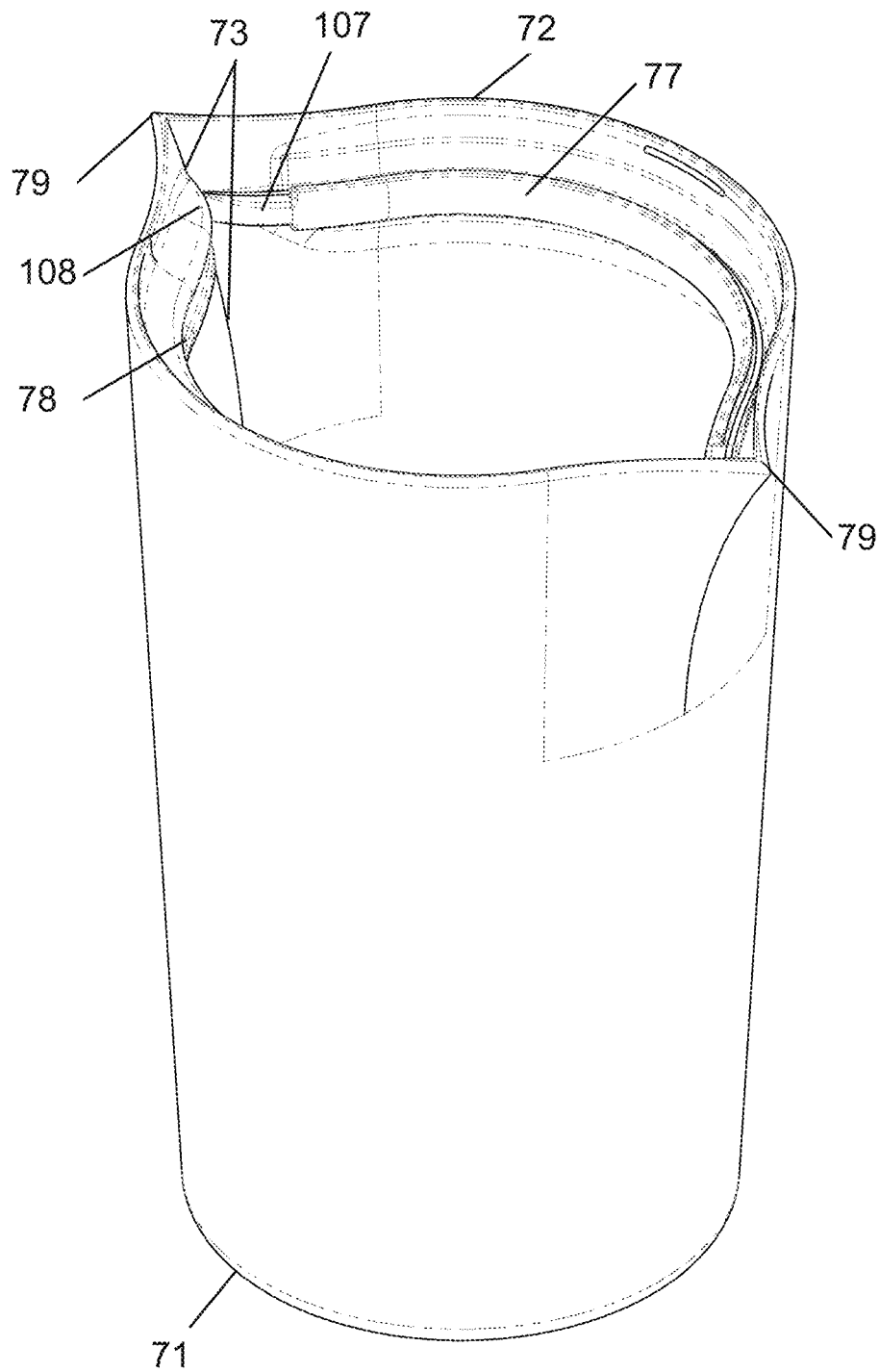


FIG. 7A

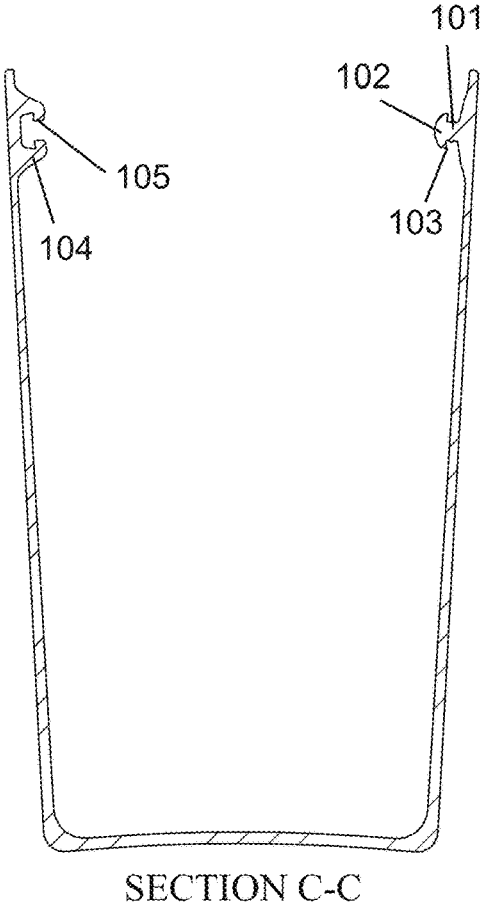
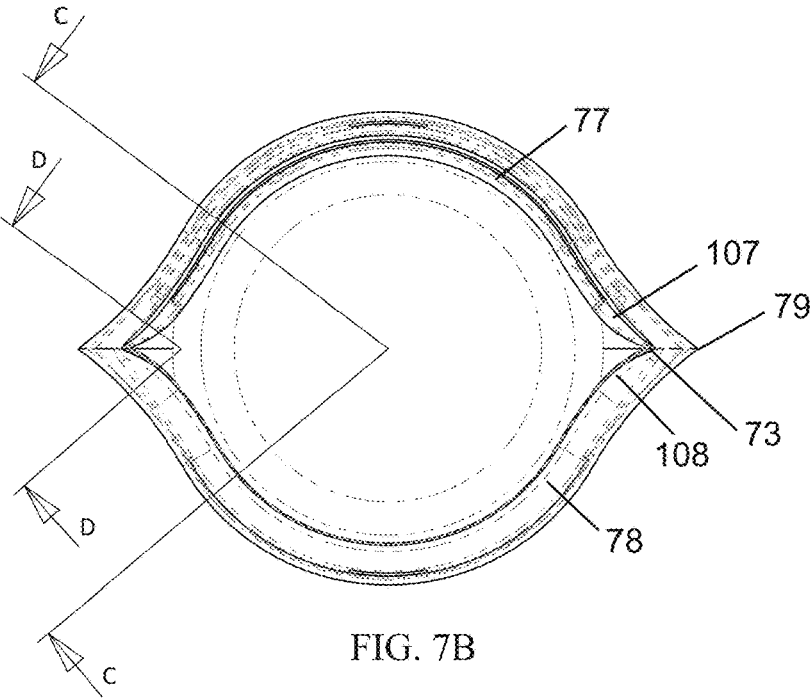


FIG. 7C

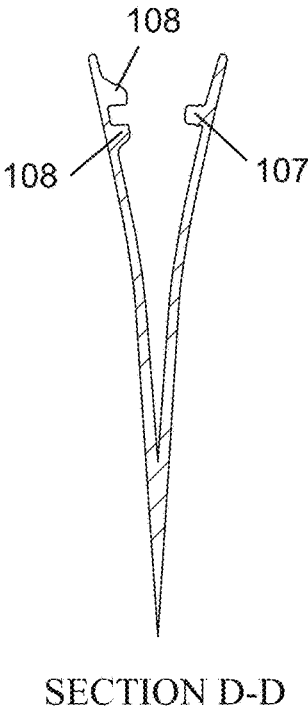


FIG. 7D

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# **SILICONE MOLDING PROCESS FOR MAKING A CONTAINER WITH ZIPPER MEMBERS TAPERED AT A FLEXIBLE SPOUT**

## **CONTINUATION STATEMENT**

This application is a continuation of U.S. application Ser. No. 16/154,134 filed Oct. 8, 2018, which is a continuation-in-part of U.S. application Ser. No. 15/910,757 filed Mar. 2, 2018, which claims the benefit of U.S. Provisional Application No. 62/466,156 filed Mar. 2, 2017, which is incorporated herein in its entirety.

## **TECHNICAL FIELD**

The present disclosure relates generally to the field of sealable cups, bowls and tumblers made of silicone.

## **BACKGROUND**

U.S. Pat. No. 6,197,359, incorporated herein by reference, describes the use of silicone for manufacturing of confectionery molds and baking receptacles, wherein silicone may be used for applications in contact with foodstuffs, in particular, methyl-vinyl-polysiloxane obtained by a process of cross-linking with platinum. Silicone is a material of polymeric nature whose chains are made up of alternating oxygen and silicon atoms. Silicones are normally prepared by hydrolysis and subsequent polymerisation of alkylhalogensilanes (both acid- and base-catalysed). The alkylhalogensilanes are in practice made by a direct process, Cu-catalysed, in which the Si reacts with the corresponding alkyl halide. This process provides mixtures of products, whose composition can be modified by a process of redistribution to yield the desired monomer. Known in the art are silicone elastomers, which are made up of linear polymers. A cross-linking, phase is required in order to provide the elastic properties. The most common elastomers are those deriving from dichloromethylsilane, with molecular weights ranging between 300,000 and 700,000. They are made by a prepolymerisation that provides octamethylcyclotetrasiloxane, purification thereof and subsequent polymerisation in the presence of a small quantity of monofunctional material in order to control the molecular weight, followed by a cross-linking similar to curing, in the presence of peroxides, which lends the material its elastic properties. Other important elastomers are those that contain a small proportion (0.1% molar) of vinyl groups linked to silicon, which undergo much more effective curing, and those that contain between 10 and 15% molar of phenyl groups, and good elastic properties at low temperatures. Elastomers of a much lower molecular weight (10,000 to 100,000) can be obtained by using linear polymer chains ending in silanol groups, which can be cured at room temperature by reaction with an alkoxyene. In general, the most important characteristic of the silicone elastomers is the fact that they present a very broad thermal spectrum of use (from -50° C. to 200° C.) without a significant alteration of their properties. They have good electrical insulation properties, do not self-oxidise or undergo attack by chemical agents in aqueous medium and swell in the presence of non-polar organic solvents, although some special types that contain fluoro- or cyano-groups offer greater resistance to this process. Silicone elastomers find their widest industrial application as electrical insulators, fluid-repellents and oxidation protectors, and in the manufacturing of hermetic gaskets. The

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silicones are highly inert materials, and they repel water. Silicone is inert to chemical agents, with the exception of strong bases and acids, and its toxicity is generally low. The origin of these properties lies essentially in the high stability of the Si—O bond (106 Kcal/mol), and in its strong partial ionic character. Other known uses of silicones are in the manufacturing of containers for liquids (such as wineskins) and tubes for transporting substances (such as the tubes used for blood transfusions).

U.S. Publication 2014/0270579, incorporated herein by reference, discloses a silicone bag. In particular, the publication teaches a bag having a front and back portion which are comprised of silicone or a similar elastomer. The front and back portion are identical in size and are sealed together along their sides and bottom with a mouth along the top portion. The mouth creates a cavity from which items are placed in and stored or transported for further use. A sealing mechanism (ribs pressed into slots) on top of the bag seals items in the bag. The bag is molded entirely of silicone, including the sealing mechanism, to be water tight.

U.S. Publication 2014/0245698, incorporated herein by reference, discloses a package having a foldable top region. The package generally includes panel portions that at least partially define an interior cavity there between and accessible through an access mouth. The top portion can provide a cuff member or cuff region that can be folded and unfolded to facilitate use of the package as a bowl or other cuffed container for material contents. The package can be adapted to hold its shape as a bowl or cuffed container. A reclosure member can be provided to facilitate re-sealing of the package. A folding strip, edge contours and stiffening members can also be provided.

U.S. Publication 2009/0110335, incorporated herein by reference, discloses a reclosable food storage bag able to withstand a wide temperature range manufactured from environmentally sensitive materials is disclosed. The bag can be manufactured from such materials as silicone rubber and thermoset resins. By using such materials, the bag can easily withstand the temperature ranges encountered in residential kitchens extending from the freezer to the oven and all ambient temperatures there between. In addition, by manufacturing the bag from such materials, the environmental impact of using petroleum based polymers is avoided.

U.S. Pat. No. 9,371,153, incorporated herein by reference, discloses a container made of an elastomer such as silicone with an integrated leak resistant seal having press-fit elements. The sizes and shapes of the press-fit elements seal the mouth to resist leakage of liquids from inside the container. No external clips or clasps are needed for the seal. Extended flaps facilitate pulling the sides open. The container itself may be of asymmetrical shape, e.g. trapezoidal.

## **SUMMARY**

In accordance with the teachings of the present disclosure, containers such as cups, bowls and tumblers made of silicone are provided that have spouts and zipper members for sealing the mouth of the container.

An aspect of the invention provides a container comprising: a base and freestanding sides extending from the base to define a mouth opposite the base, wherein the mouth has first and second spouts opposite each other and first and second interior sides opposite each other between the first and second spouts; a first zipper member extending from the first interior side of the mouth from the first spout to the second spout; a second zipper member extending from the second interior side of the mouth from the first spout to the

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second spout, wherein the mouth is deformable between open and closed configurations and the first and second zipper members are disengageable when the mouth is open and engagable when the mouth is closed, wherein the base, sides, and zipper members are a unitary whole container without assembled parts, wherein the container comprises silicone.

A further aspect of the invention provides a container made by a molding process, wherein the container comprises: a base and freestanding sides extending from the base to define a mouth opposite the base, wherein the mouth has first and second spouts opposite each other and first and second interior sides opposite each other between the first and second spouts; a first zipper member extending from the first interior side of the mouth from the first spout to the second spout; a second zipper member extending from the second interior side of the mouth from the first spout to the second spout, wherein the mouth is deformable between open and closed configurations and the first and second zipper members are disengageable when the mouth is open and engagable when the mouth is closed, wherein the base, sides, and zipper members are a unitary whole container without assembled parts, wherein the container comprises silicone, wherein the molding process comprises a silicone molding process selected from liquid injection molding, compression molding, and transfer molding.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the present embodiments may be acquired by referring to the following description taken in conjunction with the accompanying drawings, in which like reference numbers indicate like features.

FIGS. 1A and 1B illustrate perspective views of a short container in an open configuration.

FIGS. 1C, 1D and 1E show end, side and bottom views, respectively, of the short container of FIGS. 1A and 1B.

FIGS. 1F and 1G illustrate perspective views of a short container in a closed configuration.

FIGS. 1H, 1I and 1J show end, side and bottom views, respectively, of the short container of FIGS. 1F and 1G.

FIGS. 2A and 2B illustrate perspective views of a tumbler in an open configuration.

FIGS. 2C, 2D and 2E show end, side and bottom views, respectively, of the tumbler of FIGS. 2A and 2B.

FIGS. 2F and 2G illustrate perspective views of a tumbler in a closed configuration.

FIGS. 2H, 2I and 2J show end, side and bottom views, respectively, of the tumbler of FIGS. 2F and 2G.

FIGS. 3A and 3B illustrate perspective views of a bowl in open and closed configurations, respectively.

FIGS. 4A and 4B illustrate perspective views of a tall container in open and closed configurations, respectively.

FIG. 5A illustrates a perspective view of a tumbler in an open configuration.

FIG. 5B shows a top view of the tumbler of FIG. 5A, wherein the zipper members cross over and remain engaged at the spouts.

FIG. 5C shows a top view of the tumbler of FIG. 5A, wherein the zipper members cross over and remain engaged at the spouts.

FIG. 6A is a perspective view of a tumbler having a spout at each end of the mouth.

FIG. 6B shows a top view of the tumbler of FIG. 6A with cross-sections indicated.

FIGS. 6C, 6D and 6E are cross-sectional end views of the indicated cross-sections of FIG. 6B.

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FIG. 6F shows a top view of the tumbler of FIG. 6A with a cross-section indicated.

FIG. 6G is a cross-sectional front view of the tumbler of FIG. 6A showing how the zipper member terminates at the spouts.

FIG. 7A is a perspective view of a tumbler having a spout at each end of the mouth and an alternative embodiment of the zipper members.

FIG. 7B shows a top view of the tumbler of FIG. 6A with cross-sections indicated.

FIGS. 7C and 7D are cross-sectional end views of the indicated cross-sections of FIG. 7B.

#### DETAILED DESCRIPTION

Preferred embodiments are best understood by reference to FIGS. 1-8 below in view of the following general discussion. The present disclosure may be more easily understood in the context of a high level description of certain embodiments.

Embodiments of the present invention provide a cup or a bowl that stands on its own and zips at the top like a re-sealable zipper storage bag. The cup or bowl may be made with silicone in one piece, be flexible, be food grade, and be dishwasher/microwave safe. The cup or bowl may be used as a dish/cup. The cup or bowl may be used as a storage container. In particular, the cup or bowl may be great for travel.

The material may be thicker at the base for stability. The top may be thinner and more flexible. The zipper may be a tongue and groove configuration wherein a male portion is mated with a female portion to make the seal. The zipper may be a dual zipper or triple zipper. A clasp may be assembled to the exterior of the zipper for sliding along the zipper to assist with the mouth and/or closing of the zipper. The zipper may comprises male and female members that engage to seal the mouth. For purposes of this disclosure the mouth is considered sealed by the zipper members when the zipper members engage sufficiently to remain closed independent of any outside influences and retain water inside an up-side-down container. Containers may hold between 1 and 20 cups of water volume.

The container with zipper members may be molded as one unitary whole, in particular, without assembled parts. For example, to make a container that is a unitary whole without assembled parts, the entirety of the container with all its parts including zipper members may be compression molded, liquid injection molded, transfer molded or molded by any similar process. Overmolding may be included in these molding processes, wherein the zipper members may first be separately molded and then placed inside the container mold so that when the container is molded, the zipper members become "overmolded" or "encapsulated" by the liquid silicone being injected in the mold to form the container, and thereby become a unitary whole with the container. The zipper members and container may be made to become a unitary whole by separately forming or molding and then placing them in contact when the silicone material when it is not fully crosslinked (cured), and then postbaking the parts to vulcanize the whole thing. The zipper members or other portions of the container may be made from a harder durometer or different material injected into the mold, so that it may be a dual-durometer or co-molded product.

Silicone, in particular, titanium silicone may be used. A silicone having a durometer of between 30-80 shore A, for example, may be used. The silicone may have an elongation



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a break between 290% and 620%. The silicone may have a tear strength of 21-33 N/mm.

One aspect of the invention is to use a liquid silicone rubber injection mold process to make the container as a single unitary product. Uncured liquid silicone rubber may start as two materials: a base-forming material and a catalyst. The materials may be released into a mixing chamber, wherein color pigmentations or other additives may also be released into the mixing chamber. A specific volume may be injected into the mold as an appropriate shot size for each job. Temperature, pressure, injection rate and cycle time may be adjusted depending on the size and shape of the container being molded. The mold may comprise two or more plates. Liquid silicone rubber may be injected into a preheated mold to push the material into the mold and cavities therein. The liquid silicone rubber is cured in the mold by the application of heat and pressure until it solidifies. A rate of silicone shrinkage should be considered. Because silicone is an elastic material, flashing may occur when removed from the cavity of a mold. Flashing can be removed from the molded container automatically or manually.

Another aspect of the invention is to use a high consistency silicone rubber compression mold process to make the container as a single unitary product. Granular bulk silicone material is pre-catalyzed by adding powder. An exact amount of silicone required to make the container is determined. A determined amount of silicone is cut and weighed and strategically placed in a mold cavity. The silicone material may be pre-shaped to the approximate configuration of the container so that it fills all portions of the interior of the mold. The mold is heated to 300 degrees Celsius or higher as force is applied by compressing the silicone between the plates of the mold to flow the silicon into the cavities of the mold. The silicone is cured or vulcanized by an irreversible chemical reaction under heat and pressure to make a highly cross-linked molecular structure. The mold is opened and the molded container is removed. Flashing can be removed from the molded container automatically or manually.

According to certain embodiments of the invention, one feature is to have a free standing container with a zipper seal of the mouth at the top, wherein the mouth remains open when unsealed. A benefit to users is that the mouth of the container remains open in a free standing position, so users may pour or spoon contents into or out of the container without having to hold open the mouth of the container. To enable this feature, the container may be silicone molded in an open position, so that the finished container naturally wants to assume an open position. The zipper members may be silicone molded in straight molds so that by themselves they naturally tend to assume straight positions. When the zipper members are then joined in the zipper slots of the container, the combination tends to cause the mouth of the container to naturally assume an open eye-shape when free-standing.

The figures show perspective, side and end views of separate cups, bowls or containers. Each cup, bowl or container is made of a flexible material that is sufficiently rigid in the base regions to stand on their own, but sufficiently flexible in the closure region to allow the mouths to transition between open and closed configurations.

FIGS. 1A-1J show perspective, side and end views of a short container. The short container 10 comprises a base 11 that is generally oval in shape. The short container 10 further comprises a mouth 12 at the top, wherein the mouth is generally circular when open and general linear when

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closed. The base 11 comprises a wall thickness and material composition that has sufficient stiffness or rigidity to resist deformation in response to applied forces. The mouth 12 comprises wall thicknesses and material compositions that are sufficiently flexible or pliable to allow the mouth 12 to be deformed between open and closed configurations. In one embodiment, the short container 10 may have wall thicknesses or rigidity that vary uniformly from the base 11 to the mouth 12, wherein the wall thicknesses are thicker or more rigid at the base 11 and thinner or less rigid at the mouth 12. The short container 10 may have a zipper slot 13 near the mouth 12 to seal the mouth in a closed configuration.

FIG. 1A is a perspective view of the short container 10 in an open configuration wherein the view is looking down through the mouth into the interior of the short container 10. FIG. 1B is a perspective view of the short container 10 in an open configuration wherein the view is looking up toward the base 11. FIG. 1C is an end view of the short container 10 in an open configuration, wherein the view from each end is identical. FIG. 1D is a side view of the short container 10 in an open configuration, wherein the views from both the front and back are identical. FIG. 1E is a bottom view of the short container 10 in an open configuration.

FIG. 1F is a perspective view of the short container 10 in a closed configuration wherein the view is looking down at the closed mouth 12 of the short container 10. FIG. 1G is a perspective view of the short container 10 in a closed configuration wherein the view is looking up toward the base 11. FIG. 1H is an end view of the short container 10 in a closed configuration, wherein the view from each end is identical. FIG. 1I is a side view of the short container 10 in a closed configuration, wherein the views from both the front and back are identical. FIG. 1J is a bottom view of the short container 10 in a closed configuration.

In alternative embodiments, the base 11 of the short container 10 may be any geometric shape, for example, square, rectangle, triangle, octagon, hexagon, oval, etc. Further, the mouth 12 may also be of any geometric shape. Still further, cross-sections of the short container 10 between the base 11 and the mouth 12 may be of any geometric shape. In some embodiments of the invention, the base 11, mouth 12, and cross-sections between the base 11 and mouth 12 all have the same geometric shape. In still other embodiments of the invention, the base 11, mouth 12, and cross-sections between the base 11 and mouth 12 have different geometric shapes.

FIGS. 2A-2J show perspective, side and end views of a tumbler. The tumbler 20 comprises a base 21 that is generally circular in shape. The tumbler 20 further comprises a mouth 22 at the top, wherein the mouth is generally circular when open and general linear when closed. The base 21 comprises a wall thickness and material composition that has sufficient stiffness or rigidity to resist deformation in response to applied forces. The mouth 22 comprises wall thicknesses and material compositions that are sufficiently flexible or pliable to allow the mouth 22 to be deformed between open and closed configurations. The tumbler 20 may have a zipper slot 23 near the mouth 22 to seal the mouth in a closed configuration. The tumbler 20 may have wall thicknesses and rigidity that vary uniformly from the base 21 to the mouth 22, wherein the wall thicknesses are thicker or more rigid at the base 21 and thinner or less rigid at the mouth 22.

FIG. 2A is a perspective view of the tumbler 20 in an open configuration wherein the view is looking down through the mouth into the interior of the bowl 20. FIG. 2B is a perspective view of the tumbler 20 in an open configuration

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wherein the view is looking up toward the base **21**. FIG. **2C** is an end view of the tumbler **20** in an open configuration, wherein the view from each end is identical. FIG. **2D** is a side view of the tumbler **20** in an open configuration, wherein the views from both the front and back are identical. FIG. **2E** is a bottom view of the tumbler **20** in an open configuration.

FIG. **2F** is a perspective view of the tumbler **20** in a closed configuration wherein the view is looking down at the closed mouth **22** of the tumbler **20**. FIG. **2G** is a perspective view of the tumbler **20** in a closed configuration wherein the view is looking up toward the base **21**. FIG. **2H** is an end view of the tumbler **20** in a closed configuration, wherein the view from each end is identical. FIG. **2I** is a side view of the tumbler **20** in a closed configuration, wherein the views from both the front and back are identical. FIG. **2J** is a bottom view of the tumbler **20** in a closed configuration.

In alternative embodiments, the base **21** of the tumbler **20** may be any geometric shape, for example, square, rectangle, triangle, octagon, hexagon, oval, etc. Further, the mouth **22** may also be of any geometric shape. Still further, cross-sections of the tumbler **20** between the base **21** and the mouth **22** may be of any geometric shape. In some embodiments of the invention, the base **21**, mouth **22**, and cross-sections between the base **21** and mouth **22** all have the same geometric shape. In still other embodiments of the invention, the base **21**, mouth **22**, and cross-sections between the base **21** and mouth **22** have different geometric shapes.

FIG. **3A** is a perspective view of the bowl **30** in an open configuration wherein the view is looking down through the mouth **32** into the interior of the bowl **30**. A zipper slot **33** is just inside the mouth **32**. The bowl **30** stands vertically upright on a base **31**. FIG. **3B** is a perspective view of the bowl **30** in a closed configuration wherein the view is looking down at the closed mouth **32** of the bowl **30**.

FIG. **4A** is a perspective view of a tall container **40** in an open configuration wherein the view is looking down through the mouth **42** into the interior of the tall container **40**. The tall container **40** stands vertically on its base **41** with the mouth **42** at the top. A zipper slot **43** is just inside the mouth **42**. FIG. **4B** is a perspective view of the tall container **40** in a closed configuration wherein the view is looking down at the closed mouth **42** of the tall container **40**.

FIG. **5** shows a perspective view of a tumbler **50**. The tumbler **50** comprises a base **51** that is circular in shape. The tumbler **50** further comprises a mouth **52** at the top, wherein the mouth **52** is generally circular when open and generally linear when closed. The tumbler **50** further comprises a rim **54** between the base **51** and the mouth **52**. The tumbler **50** comprises a lower wall **55** between the base **51** and the rim **54** having a thickness and material composition that has sufficient stiffness or rigidity to resist deformation in response to applied forces, so that the tumbler **50** may freely stand vertically on its base **51**. Further, the tumbler **50** has an upper wall **56** between the base **51** and the rim **54** having a wall thickness and material composition sufficiently flexible or pliable to allow the mouth **52** to be deformed between open and closed configurations. In one embodiment, the circumference of the upper wall **56** above the rim **54** may be larger than the circumference of the lower wall **55** below the rim **54**, so that the upper wall **56** may be rolled or folded down over the exterior of the lower wall **55** below the rim **54**. In a rolled or folded down configuration, the bowl **50** may more fully function as a traditional bowl. To seal the tumbler **50**, the upper wall **56** may be unrolled or unfolded to an extended position, as shown in FIG. **5**, and a zipper in

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the zipper slot **53** may be zipped to form a seal. Embodiments of a container, cup or bowl may be similar to the tumbler **50** shown in FIG. **5**.

Some embodiments of the invention, made of silicone, have base and sidewall thicknesses greater than 0.5 mm. Other embodiments of the invention, made of silicone, have base and sidewall thicknesses between about 0.7 mm and about 1.3 mm. Still further embodiments of the invention, made of silicone, have base and sidewall thicknesses of about 1.0 mm.

The tumblers, cups or bowls may be made of silicone material that is either transparent or opaque and made to be any color. The silicone may be of a quality and composition appropriate for applications in contact with foodstuffs. In particular, methyl-vinyl-polysiloxane obtained by a process of cross-linking with platinum may be an appropriate silicone. Material may include polyurethane rubber, tin-cured silicone rubber, and platinum-cured silicone rubber. Numeric markers may be added to indicate volumetric measurements within the cups, bowls or tumblers.

FIG. **5B** is a cross-sectional top view of the tumbler shown in FIG. **5A**, wherein male and female zipper members **57** and **58** are shown. The male zipper member **57** is positioned just inside the mouth **52** and extends from one interior side of the tumbler **50**. The female zipper member **58** is positioned just inside the mouth **52** and extends from the other side of the tumbler **50**. In this embodiment, the tumbler **50** has relatively thick tips **59** at opposite ends of the mouth **52**, wherein each tip **59** form an interior wall transverse to the axis of the mouth **52**. The exterior surfaces of tips **59** provide "handles" for a user to hold the tumbler **50** while closing the zipper members **57** and **58** together. The zipper members terminate at the interior walls of the tips **59** to completely seal the mouth **52** of the tumbler **50** when closed. The zipper members **57** and **58** "cross over" each other at the tips **59** so that the male and female zipper elements completely engage at the tips **59**, even when the mouth **52** of the tumbler **50** is open as shown in FIG. **5B**. To close the mouth **52**, a user simply squeezes the sides of the mouth **52** together and pinches the zipper members **57** and **58** together until the male and female zipper members **57** and **58** are completely engaged from tip **59** to tip **59**. When open, the mouth **52** forms a spout **53** at each tip **59**.

FIG. **5C** is a cross-sectional top view of an alternative tumbler **50** shown in FIG. **5A**, wherein male and female zipper members **57** and **58** are shown. Similar to the embodiment shown in FIG. **5B**, the male zipper member **57** is positioned just inside the mouth **52** and extends from one interior side of the tumbler **50** and the female zipper member **58** is positioned just inside the mouth **52** and extends from the other side of the tumbler **50**. However, in this embodiment, the tips **59**, formed at each end of the mouth **52**, have relatively thin wall thicknesses and each tip **59** does not form an interior wall transverse to the axis of the mouth **52**. The wall thicknesses in the region of the tip **59** is approximately the same as the side walls forming the mouth **52**. The male and female zipper members **57** and **58** extend all the way to the most extreme ends of the tips **59** and "cross over" each other at the tips **59**. The ends of the zipper members **57** and **58** are angled at about 45 degrees, so that when the zipper members **57** and **58** are closed together, they seal the zipper at the tips **59**.

FIGS. **6A-6E** show perspective, top and cross-sectional end views of a tumbler **60**. The tumbler **60** comprises a base **61** that is generally circular in shape. The tumbler **60** further comprises a mouth **62** at the top, wherein the mouth is generally circular when open and generally linear when

closed. At each end of the interior of the mouth 62, the tumbler 60 has a spout 63. In this embodiment, the tips 69, formed at each end of the mouth 62, have wall thicknesses approximately the same as the side walls forming the mouth 62. The male zipper member 67 is positioned just inside the mouth 62 and protrudes from one interior side of the tumbler 60 and extends from one spout 63 to the other spout 63. The female zipper member 68 is positioned just inside the mouth 62 and protrudes from the other interior side of the tumbler 60 and extends from one spout 63 to the other spout 63.

FIG. 6A is a perspective view of the tumbler 60. FIG. 6B is a top view of the tumbler 60 with indicated cross-sections, wherein sections C-C, D-D and E-E are shown in FIGS. 6C-6E, respectively. Throughout a substantial portion of the middle of the male and female members 67 and 68, the members are fully formed and fully dimensioned. FIG. 6C shows the fully formed and fully dimensioned male and female members 67 and 68. In this embodiment, the members have interlocking features that hold them together and form a seal when the male zipper member 67 is inserted into the female zipper member 68. In cross-section, the male zipper member 67 has a button or mushroom profile having a trunk 101 with a head 102 at the distal end of the trunk 101. The head 102 is wider than the trunk 101 so that two shoulders 103 extend in opposite directions from the trunk 101. In cross-section, the female zipper member 68 comprises two opposed flanges 104, wherein each flange 104 has a shoulder 105 extending toward the opposite flange 104. When the male and female members 67 and 68 are engaged to close and seal the mouth 62, the head 102 is inserted between the flanges 104 until the shoulders 103 of the male zipper member 67 become locked behind shoulders 105 of the female zipper member 68. Because the male and female members 67 and 68 are made of a flexible material, the members flex during insertion and rebound upon engagement.

As the male and female members 67 and 68 extend toward the spouts 63, they become shorter in height but retain their form. FIG. 6D shows the relatively shorter male and female members 67 and 68. In particular, the size of the head 102 of the male zipper member 67 is the same size and the channel defined by the flanges 104 of the female zipper member 68 is the same size as the head and channel shown in FIG. 6C.

As the male and female members 67 and 68 extend nearly to the spouts 63, they become even shorter in height and change their form. In this embodiment, the members change their form by reducing the size of the head 102 and reducing the size of the channel between the flanges 104. FIG. 6E shows the relatively shorter male and female members 67 and 68. The shoulders 103 and 105 also shrink in size as the member tapers toward the spouts 63. The male and female members 67 and 68 continue to taper until they become non-existent at the spouts 63.

FIG. 6F is a bottom view of the tumbler 60 shown in FIGS. 6A-6E, indicating a cut-away elevation G-G along the axis of the mouth 62. FIG. 6G is a cut-away front view of the tumbler 60, wherein the cut-away is at Section G-G so that the interior of the tumbler 60 is visible. The female zipper member 68 extends from one spout 63 to the other. The female zipper member 68 has two flanges 104, which define a channel between for receiving the head 102 of the male zipper member 67 (not shown). The flanges 104 taper and become smaller as they extend toward the spouts 63 so that they terminate at the spouts 63. Of course, the channel defined between the flanges 104 also terminates at the spouts 63.

Referring again to FIGS. 6A and 6B, the male and female zipper members 67 and 68 do not interfere with the spout 63. When the mouth 62 is open, the male and female zipper members 67 and 68 do not engage with each other at the spouts 63. This allows a fluid contained within the tumbler 60 to be poured out of either spout 63 without flowing over either of the male and female zipper members 67 and 68. Rather, the fluid may flow between the male and female zipper members 67 and 68 through either of the spouts 63. Further, because the zipper members do not engage when the mouth 62 is open, there is less opportunity for debris and residue to become lodged in the channel defined between the flanges 104 of the female zipper member 68 or behind the head 102 of the male zipper member 67.

FIGS. 7A-7D show perspective cross-sectional end views of an alternative tumbler 70. The tumbler 70 comprises a base 71 that is generally circular in shape. The tumbler 70 further comprises a mouth 72 at the top, wherein the mouth is generally circular when open and generally linear when closed. At each end of the interior of the mouth 72, the tumbler 70 has a spout 73. In this embodiment, the tips 79, formed at each end of the mouth 72, have wall thicknesses approximately the same as the side walls forming the mouth 72. The male zipper member 77 is positioned just inside the mouth 72 and protrudes from one interior side of the tumbler 70 and extends from one spout 73 to the other spout 73. The female zipper member 78 is positioned just inside the mouth 72 and protrudes from the other interior side of the tumbler 70 and extends from one spout 73 to the other spout 73. In this embodiment, the male and female zipper members 77 and 78 have end sections near the spouts 73 that are much different than the middle sections.

FIG. 7A is a perspective view of the tumbler 70. FIG. 7B is a top view of the tumbler 70 with indicated cross-sections, wherein sections C-C and D-D are shown in FIGS. 7C and 7D, respectively. FIG. 7C shows the male zipper member 77 has a button or mushroom profile having a trunk 101 with a head 102 at the distal end of the trunk 101. The head 102 is wider than the trunk 101 so that two shoulders 103 extend in opposite directions from the trunk 101. In cross-section, the female zipper member 78 comprises two opposed flanges 104, wherein each flange 104 has a shoulder 105 extending toward the opposite flange 104. When the male and female members 77 and 78 are engaged to close and seal the mouth 72, the head 102 is inserted between the flanges 104 until the shoulders 103 of the male zipper member 77 become locked behind shoulders 105 of the female zipper member 78. Both the male zipper member 77 and female zipper member 78 maintain their cross-sectional profiles throughout the entire middle sections. The ends of the male and female zipper members 77 and 78 have a different profile compared to the middle sections. The ends of the male zipper members 77 have a cross-sectional profile in the shape of a headless trunk 107. See FIG. 7D. The ends of the female zipper members 78 have a cross-sectional profile in the shape of two shoulderless flanges 108, which define a channel between the flanges. See FIG. 7D. Thus, a difference between the embodiment of FIGS. 6A-6F and the embodiment of FIGS. 7A-7D is that the shoulders 103 and 105 terminate well before the male and female zipper members 77 and 78 terminate at the spouts 73. However, a similar feature of the two embodiments is that the male and female zipper members 77 and 78 do not interfere with the spout 73. When the mouth 72 is open, the male and female zipper members 77 and 78 do not engage with each other at the spouts 73. This allows a fluid contained within the tumbler 70 to be poured out of either spout 73 without flowing over

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either of the male and female zipper members 77 and 78. Rather, the fluid may flow between the headless trunk 107 and the shoulderless flanges 108 through either of the spouts 73. Further, because the zipper members do not engage when the mouth 72 is open, there is less opportunity for debris and residue to become lodged in the channel defined between the shoulderless flanges 108 of the female zipper member 78 or around the headless trunk 107 of the male zipper member 77.

Although the disclosed embodiments are described in detail in the present disclosure, it should be understood that various changes, substitutions and alterations can be made to the embodiments without departing from their spirit and scope.

What is claimed is:

1. A silicone container making process, the process comprising:

placing a first mold in proximity with at least a second mold to define a mold cavity of sufficient size and shape to mold a unitary whole container;

mixing a base-forming material and a catalyst to make uncured silicone;

putting the uncured silicone into the mold cavity;

curing the uncured silicone by applying heat and pressure to the uncured silicone in the mold cavity until the silicone cures to form the unitary whole container comprising:

a container portion defining a mouth, wherein the mouth has at least one flexible spout and first and second interior sides opposite each other;

a zipper portion comprising:

a female zipper member extending from the first interior side of the mouth, the female zipper member comprising:

a female middle section comprising two middle flanges defining a middle channel between the two middle flanges, and

at least one female end section proximate the at least one flexible spout and comprising two end flanges extending from the first interior side of the mouth to define an end channel between the two end flanges,

wherein the two middle flanges extend farther from the first interior side of the mouth than the two end flanges;

a male zipper member extending from the second interior side of the mouth, wherein the female and male zipper members are positioned opposite each other so as to be engageable when closing the mouth, the male zipper member comprising:

a male middle section comprising a middle trunk; and

at least one male end section proximate the at least one flexible spout comprising an end trunk, wherein the middle trunk extends farther from the second interior side of the mouth than the end trunk;

opening the first mold relative to the at least second mold; and

removing the container from the mold cavity.

2. A silicone container making process, as claimed in claim 1, wherein said mixing a base-forming material and a catalyst to make uncured silicone comprises mixing in a mixing chamber and the uncured silicone comprises liquid silicone, wherein said putting the uncured silicone into the mold cavity comprises injecting liquid silicone.

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3. A silicone container making process, as claimed in claim 1, wherein said mixing a base-forming material and a catalyst to make uncured silicone comprises mixing a granular bulk material and a catalyzing powder, and the uncured silicone comprises a silicone dough, wherein said putting the uncured silicone into the mold cavity comprises placing the silicone dough into the mold cavity.

4. A silicone container making process, as claimed in claim 1, wherein said curing the uncured silicone by applying heat and pressure to the uncured silicone in the mold cavity comprises curing the silicone to a durometer of between 30 and 80 shore A.

5. A silicone container making process, as claimed in claim 1, wherein said curing the uncured silicone by applying heat and pressure to the uncured silicone in the mold cavity comprises curing the silicone to have an elongation break between 290% and 620%.

6. A silicone container making process, as claimed in claim 1, wherein said curing the uncured silicone by applying heat and pressure to the uncured silicone in the mold cavity comprises curing the silicone to have a tear strength of between 21 N/mm and 33 N/mm.

7. A silicone container making process, as claimed in claim 1, wherein said curing the uncured silicone by applying heat and pressure to the uncured silicone in the mold cavity comprises heating the uncured silicone to at least 300 degrees Celsius.

8. A silicone container making process, as claimed in claim 1, wherein placing a first mold in proximity with at least a second mold to define a mold cavity of sufficient size and shape comprises defining the mold cavity to produce a wall thickness of the at least one flexible spout between 0.7 mm and 1.3 mm.

9. A silicone container making process, the process comprising:

placing a first mold in proximity with at least a second mold to define a mold cavity of sufficient size and shape to mold a unitary whole container;

mixing a base-forming material and a catalyst to make uncured silicone;

putting the uncured silicone into the mold cavity;

curing the uncured silicone, by applying heat and pressure to the uncured silicone in the mold cavity, to form the unitary whole container having a durometer of between 30 and 80 shore A and comprising:

a container portion defining a mouth, wherein the mouth has at least one flexible spout and first and second interior sides opposite each other, wherein the first and second interior sides have thicknesses greater than 0.5 mm;

a zipper portion comprising:

a female zipper member extending from the first interior side of the mouth and tapering until it terminates at the at least one flexible spout; and

a male zipper member extending from the second interior side of the mouth and tapering until it terminates at the at least one flexible spout;

opening the first mold relative to the at least second mold; and

removing the unitary whole container from the mold cavity.

10. A silicone container making process, as claimed in claim 9, wherein said mixing a base-forming material and a catalyst to make uncured silicone comprises mixing in a mixing chamber and the uncured silicone comprises liquid silicone, wherein said putting the uncured silicone into the mold cavity comprises injecting liquid silicone.



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11. A silicone container making process, as claimed in claim 9, wherein said mixing a base-forming material and a catalyst to make uncured silicone comprises mixing a granular bulk material and a catalyzing powder, and the uncured silicone comprises a silicone dough, wherein said putting the uncured silicone into the mold cavity comprises placing the silicone dough into the mold cavity.

12. A silicone container making process, as claimed in claim 9, wherein said curing the uncured silicone comprises curing the silicone to have an elongation break between 290% and 620%.

13. A silicone container making process, as claimed in claim 9, wherein said curing the uncured silicone comprises curing the silicone to have a tear strength of between 21 N/mm and 33 N/mm.

14. A silicone container making process, as claimed in claim 9, wherein said curing the uncured silicone comprises heating the uncured silicone to at least 300 degrees Celsius.

15. A silicone container making process, the process comprising:

placing a first mold in proximity with at least a second mold to define a mold cavity of sufficient size and shape to mold a unitary whole container;

mixing in a mixing chamber a base-forming material and a catalyst to make liquid uncured silicone;

injecting the liquid uncured silicone into the mold cavity;

curing the liquid uncured silicone, by applying heat and pressure to the liquid uncured silicone in the mold cavity, to form the unitary whole container comprising:

a container portion defining a mouth, wherein the mouth has at least one flexible spout and first and second interior sides opposite each other, wherein the first and second interior sides have thicknesses greater than 0.5 mm;

a zipper portion comprising:

a female zipper member extending from the first interior side of the mouth, the female zipper member comprising:

a female middle section less than 5.0 mm thick comprising two middle flanges defining a middle channel between the two middle flanges, and

at least one female end section proximate the at least one flexible spout and comprising two end

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flanges extending from the first interior side of the mouth to define an end channel between the two end flanges,

wherein the two middle flanges extend farther from the first interior side of the mouth than the two end flanges;

a male zipper member extending from the second interior side of the mouth, wherein the female and male zipper members are positioned opposite each other so as to be engageable when closing the mouth, the male zipper member comprising:

a male middle section less than 5.0 mm thick comprising a middle trunk; and

at least one male end section proximate the at least one flexible spout comprising an end trunk, wherein the middle trunk extends farther from the second interior side of the mouth than the end trunk;

opening the first mold relative to the at least second mold; and

removing the unitary whole container from the mold cavity.

16. A silicone container making process, as claimed in claim 15, wherein said curing the liquid uncured silicone comprises curing the silicone to a durometer of between 30 and 80 shore A.

17. A silicone container making process, as claimed in claim 15, wherein said curing the liquid uncured silicone comprises curing the silicone to have an elongation break between 290% and 620%.


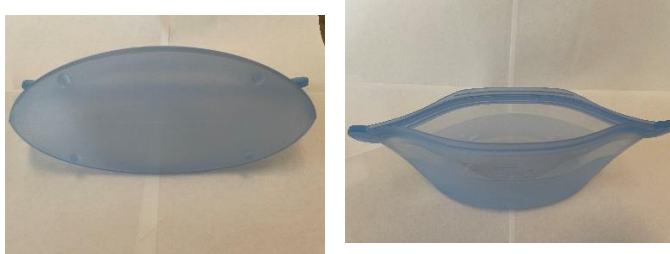

18. A silicone container making process, as claimed in claim 15, wherein said curing the liquid uncured silicone comprises curing the silicone to have a tear strength of between 21 N/mm and 33 N/mm.


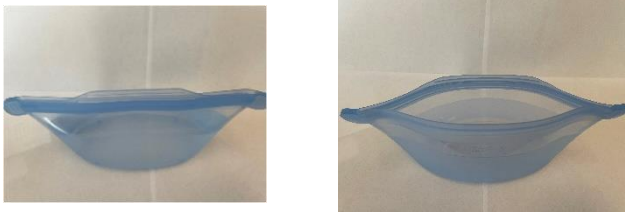

19. A silicone container making process, as claimed in claim 15, wherein said curing the liquid uncured silicone comprises heating the silicone to at least 300 degrees Celsius.


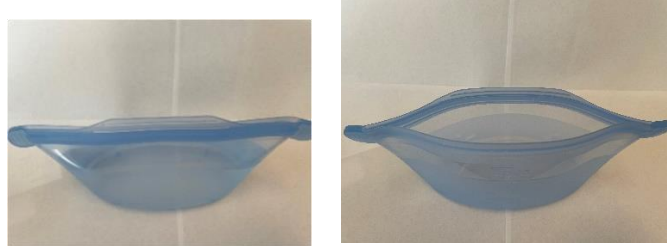
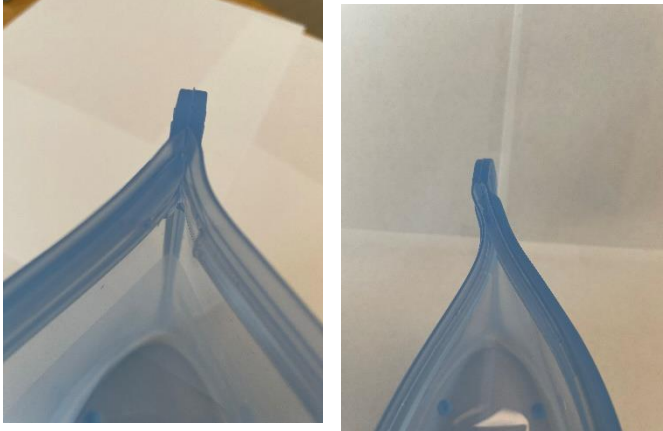
20. A silicone container making process, as claimed in claim 15, wherein placing a first mold in proximity with at least a second mold to define a mold cavity of sufficient size and shape comprises defining the mold cavity to produce a wall thickness of the at least one flexible spout between 0.5 mm and 1.3 mm.

\* \* \* \* \*

**EXHIBIT C**


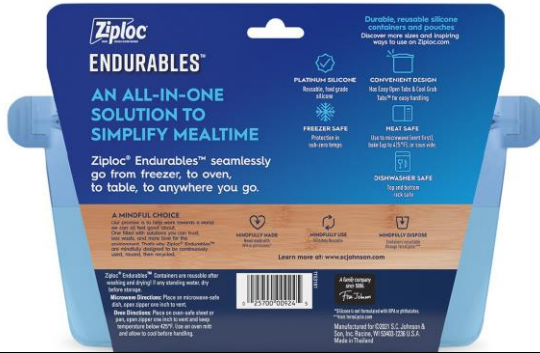

US 11,358,755	Accused Instrumentalities
1. A sealable container comprising:	
<p>a base having a geometric shape;</p> <p>a plurality of sides extending from the base to form the container, wherein a cross-section of the plurality of sides parallel to the base has a geometric shape substantially the same as the geometric shape of the base, wherein the base and at least a portion of the plurality of sides adjacent the base are of sufficient thickness and rigidity to enable the container to freely stand vertically on its base;</p>	
<p>a mouth defined by the sides opposite the base, the mouth comprising:</p> <p>a first tip formed by the sides at a first end of the mouth,</p> <p>a second tip formed by the sides at a second end of the mouth,</p> <p>a first side of the plurality of sides extending from the first tip of the mouth to the second tip of the mouth,</p> <p>a second side of the plurality of sides opposite the first side and extending from the first tip of the mouth to the second tip of the mouth,</p>	

<p>a seal of the mouth comprising:</p> <p>a first zipper member extending from an interior face of the first side of the plurality of sides from the first tip of the mouth to the second tip of the mouth,</p> <p>a second zipper member extending from an interior face of the second side of the plurality of sides from the first tip of the mouth to the second tip of the mouth so that the second zipper member is opposite the first zipper member,</p>	
<p>wherein at least portions of the first and second zipper members are sufficiently resilient to be sealingly engageable with each other to maintain the seal of the mouth and disengageable between the first and second tips to break the seal of the mouth,</p>	
<p>wherein the mouth and seal are configured to automatically assume an open configuration when the container freely stands vertically on its base with the mouth at the top and the first and second zipper members are disengaged, the open configuration comprising an eye-shape with the first and second tips at opposite ends of the eye-shape,</p>	

<p>wherein the mouth and seal are configured to assume a closed configuration when the first and second zipper members are engaged with each other, and the first and second zipper members are generally linear in the closed configuration, and</p>	
<p>wherein the first and second sides adjacent the mouth and the first and second zipper members comprise wall thicknesses and material compositions that are sufficiently flexible or pliable to be deformable between the open configuration and the closed configuration, and</p>	
<p>wherein at the first and second tips, ends of the first and second zipper members are angled at about 45 degrees, so that when the zipper members are engaged, they seal the mouth at the tips.</p>	



**EXHIBIT D**

US 11,383,890	Accused Instrumentalities
1. A silicone container making process, the process comprising:	<b>35 U.S.C. §271(g)</b> – “Whoever without authority imports into the United States or offers to sell, sells, or uses within the United States a product which is made by a process patented in the United States shall be liable as an infringer, if the importation, offer to sell, sale, or use of the product occurs during the term of such process patent.”
placing a first mold in proximity with at least a second mold to define a mold cavity of sufficient size and shape to mold a unitary whole container;	 <p>The “parting line” evidences the use of two molds forming a cavity to shape and mold the unitary whole container.</p>
<p>mixing a base-forming material and a catalyst to make uncured silicone;</p> <p>putting the uncured silicone into the mold cavity;</p> <p>curing the uncured silicone by applying heat and pressure to the uncured silicone in the mold cavity until the silicone cures to form the unitary whole container comprising:</p>	<p>“PLATINUM SILICONE Reusable, food grade silicone”</p> 
a container portion defining a mouth, wherein the mouth has at least one flexible spout and first and second interior sides opposite each other;	

a zipper portion comprising:



a female zipper member extending from the first interior side of the mouth, the female zipper member comprising:

a female middle section comprising two middle flanges defining a middle channel between the two middle flanges, and

at least one female end section proximate the at least one flexible spout and comprising two end flanges extending from the first interior side of the mouth to define an end channel between the two end flanges,

wherein the two middle flanges extend farther from the first interior side of the mouth than the two end flanges;



<p>a male zipper member extending from the second interior side of the mouth, wherein the female and male zipper members are positioned opposite each other so as to be engageable when closing the mouth, the male zipper member comprising:</p> <p>a male middle section comprising a middle trunk; and</p> <p>at least one male end section proximate the at least one flexible spout comprising an end trunk,</p> <p>wherein the middle trunk extends farther from the second interior side of the mouth than the end trunk;</p>	
<p>opening the first mold relative to the at least second mold; and</p> <p>removing the container from the mold cavity.</p>	 <p>The “parting line” evidences the use of two molds forming a cavity to shape and mold the unitary whole container.</p>